ETHNIC STRATIFICATION IN NEW ZEALAND

A 'TOTAL SOCIAL PRODUCTION' PERSPECTIVE

by

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DECLARATION

Except where otherwise indicated, this thesis is my own work, carried out under a Ph.D Scholarship at the Australian National University.

N.O. Jackson

Natalie Olivia Jackson

For my mother

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ABSTRACT

Since populations must both produce (through work) and reproduce themselves in order to survive, studies of ethnic stratification that consider only the economically-productive dimension fail to come to grips with the complexities of human existence. As a result, such studies have limited use for policy makers who might attempt to address the situation, and/or to consider the extent to which a given policy may further exacerbate (or ameliorate) ethnic inequality. In an effort to incorporate a demographic dimension into the study of ethnic stratification, this thesis drew on the theoretical frameworks of 'total social production', investigating the extent to which demographic reproduction—manifested as population age structure, but also involving ethnic differences in the timing of family formation and, implicitly, family composition and size—has interacted with factors related to economic production (particularly, labour force participation, the gaining of educational qualifications, income), to play a role in ethnic stratification in New Zealand.

Although constrained by a lack of reliable socio-economic data on the indigenous Maori population until the 1940s, the study proper covers the period 1840-1991. Five conceptual chapters develop the theoretical and methodological framework, paying particular attention to issues such as ethnic classification and the related difficulties of exploring ethnic differentials over time. The substantive chapters begin with an historical overview, in which the colonisation and eventual proletarianisation of the Maori population by the incoming settler, primarily European population, is described. As data on Maori become available they are woven into the analysis, and the development of demographic and socio-economic differentials between the two populations is described and examined in the context of colonisation and its aftermath. Four further substantive chapters examine whether trends in these differentials have diverged or converged over time, and the extent to which the demographic variables—especially age structure—have been involved. A final chapter explores the key socio-economic differentials (labour force participation, employment, income) in the context of the 'Easterlin Hypothesis'—the argument that cohort size plays a role in inequality—exploring whether or not the socio-economic and demographic patterns and trends have been linked, both within and between the two ethnic groups.

The study found an even more complex situation than first envisaged. The youthful age structure of the Maori population was, for example, already well understood by scholars of ethnic stratification to account for a sizeable—if seldom quantitatively demonstrated—proportion of aggregate Maori unemployment. What was not expected was that the contemporary age structures of the Maori and European/non-Maori populations would turn out to be, at least partly, a legacy of the historical appropriation of Maori resources by European. Nor was anticipated the complexity of the age-structural effect, which in several instances added to Maori disadvantage, but often offset or partially concealed it; nor the extent to which cohort size would be found to correlate with ethnic inequality; nor the extent to which the period of childbearing and childrearing would coincide with the highest levels of inequality between Maori and European/non-Maori females (despite the fact that ethnic differences in family formation and family size appear to be one of the factors that reduced income inequality within certain income categories); nor the extent to which conventional understandings of changes in the timing of family formation and family size may need to be re-examined.

These findings aside, however, perhaps the most unexpected was the extent to which Maori disadvantage on many indicators had declined to near zero by the 1960s and 1970s, but then increased during the 1980s, and continued to increase until at least 1991, when the period covered by the thesis ends. These recent trends, which move in the opposite direction to what might have been expected, have an important message for those who believe that market forces will deliver a just society.

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Preface

This thesis grew out of three deficits. The first was my perception that a demographic perspective was missing from the stratification literature. For me, a journey through the disciplines of demography, sociology and anthropology during my undergraduate and Masters years had presented a picture of two populations (Maori and European) with very different age structures and family formation patterns, passing simultaneously through the same political economy and policy-making environment. The demographic characteristics, I felt, must interact in various ways with the events and policies of the period. In 1991, for example, when it was announced that the age of eligibility for the adult rate of unemployment benefit was being raised (overnight) from 20 to 25 years of age, I wondered about the potentially discriminatory aspects of this otherwise 'ethnically-neutral' policy. At the time, 36 per cent of the Maori working age population were aged between 15 and 24 years, compared with 24 per cent of the non-Maori population, and the former were experiencing an unemployment rate three times that of the latter. Thus I also became aware of the second deficit, this being the lack of attention paid by policy-makers to the potential implications of such discrepancies.

The third deficit I discovered when I attempted to research the former issue for my Masters thesis. I encountered great difficulty in finding useful empirical material. Much of the literature had taken at face value the crude statistical differences between the two populations, often acknowledging issues such as age structure, but seldom exploring them further. The material was also often of limited assistance because factors such as the ethnic classification or the age groups to which the data pertained were seldom noted, meaning that discrepancies between the various collections could not be resolved in order to develop a satisfactory time-series analysis.

This thesis addresses these deficits. One deficit that could not be addressed must also be acknowledged. The thesis was written prior to the availability of data from the 1996 Census, and thus the study-proper ends in 1991. Between 1991 and the present, a number of important events have occurred that may have a significant bearing on the findings of this thesis. Uppermost amongst these were the peaking of unemployment in 1992 at 11.8 per cent of the labour force, and its fall to just on 7 per cent at the time of writing; and in 1994, the announcement by the Government of its plan to make substantial reparation (*raupatu*) for the confiscation of Maori land.

Nevertheless, the most recent Household Labour Force Survey data show that Maori remain three times more likely than European to be unemployed. Recently released data from the 1996 Census also show that the mean total income of all Maori males of working age has declined to 65 per cent of that of their non-Maori counterparts, down from its peak in 1981 of 77 per cent, whilst for the employed male population the decline was from 78 to 72 per cent (Martin 1997c). For all 15-64 year old females, and employed-only females, the declines were to 78 and 83 per cent, from their respective peaks in 1986 and 1991 of 86 and 94 per cent. Most commentators see these increases in income disparity as reflecting a combination of continuing changes in labour force composition, remuneration for skills, and the 1991 restructuring of the welfare state, which post-dated the period covered by this thesis. At that time, arguably severe cuts were made to almost all income support benefits, and substantial restrictions in eligibility were implemented. Certainly it has been widely argued by leading academics in the field that the 1991 changes have substantially increased income inequality and poverty in New Zealand, and there can be little doubt that Maori will have been especially affected.

PART 1

SETTING THE PROBLEM

1
OVERVIEW

> *..it is the structure of class relations, of class power, which will determine the manner and degree to which particular demographic changes will affect long-run trends in the distribution of income and economic growth, and not vice-versa* (Brenner 1976:31).

Populations must both produce and reproduce if they are to survive. As a result, research that gives primacy to one or another aspect of human existence not only over-simplifies what is really a complex situation, but also compromises the basis upon which those who would address important social issues attempt to do so. The alternative, a more holistic approach, is far less tidy, but provides a more realistic basis from which to begin.

The relationship between ethnic stratification and the demographic features of ethnic groups, such as their relative age structures, reflects one such issue. Typically, the study of ethnic stratification, which investigates the development and maintenance of societal divisions based on ethnicity, focuses on factors related to economic production, such as the extent to which each ethnic group is concentrated within a certain range of occupational, educational or income bands. Unless specifically concerned with women, such studies pay little attention to the role that the reproduction of the ethnic group itself might play in the maintenance of ethnic stratification. This is not to say that the demographic dimension is ignored by scholars of ethnic stratification. Many such analysts control for statistically, or at least acknowledge, the effects of ethnic differences in age structure (or family type and size) on such issues as income inequality. Rather, it is a contention that—when acknowledged—factors such as age structure are seen as methodological issues only, and not in terms of their interdependence with historical events, opportunity structures and policies (period factors). As a result, their *a priori* relationships with, and implications as potential forces in the continuing maintenance of, ethnic stratification, are largely overlooked, as are their policy implications, and indeed, perhaps, their policy *obligations*.

The general exclusion of a demographic perspective from studies concerned with ethnic stratification is not difficult to understand. Most Marxist scholarship, for example, holds that the field of economic production has primacy over all other human activities. Weber, similarly, failed to find a place for the phenomenon in his class-status-party triad. Paralleling these traditions, both classical and neo-classical economics, despite their preoccupation with notions of supply and demand, see demographic reproduction as an 'externality'. Brenner (1976:31), as the above quotation illustrates, stated categorically that any active feedback of demographic forces into class relations *will not occur* (see also Seccombe 1983:22).

Drawing on the premises of total social production, however, that is, the argument that societies must both produce and reproduce if they are to survive (Cordell, Gregory and Piché 1987, 1994:23-24; Seccombe 1993), this thesis argues that demographic forces *can* feed back into class relations, especially when these class relations are framed in terms of ethnic stratification—or, as is argued later, a cultural division of labour (Hechter 1975, 1978). Putting the argument at its most simplistic—and extrapolating from an old demographic adage, 'the rich get rich and the poor get children'—it can be said that the rich (populations) get older age structures and the poor (populations) get young ones, at least at certain historical junctures. Here age structures, which reflect the combined effects of births, deaths, and, usually to a lesser extent, migration, are the outcomes, or dependent variables, of the underlying socio-economic characteristics. When these different age structures pertain to sub-populations, such as ethnic groups, the groups can be expected to have different interactions—or social relations—with economic production. A younger population will have proportionately less of its members owning the means of production (whether these be capital, skills or qualifications); an older population will have more. Here age structures—demographic forces—are the independent variable, and socio-economic class is the outcome. The methodological process of standardisation can refine such comparisons, but it cannot do anything about the ongoing realities: it is the people *in* the 'empty class structures' (Wright 1985:10) or status groups who ultimately have such relationships, not their statistically controlled numbers. Indeed, unless statistical controls are used in a critical manner, they can remove from view the very factors that create the difference.

Addressing a parallel issue, Seccombe (1983:22) saw the problem this way:

> [T]here has been an unfortunate counterposition of the socio-economic to the demographic, as if these two dimensions of social relations were materially inseparable under capitalism or elsewhere, and as if the lines of causality ran, unidialectically, only one way from the socio-economic and political to the demographic ...

Formally, the argument that demographic forces may be implicated in the maintenance of ethnic stratification can be based on five premises. 1) If there is no reproduction of the labour force or the population, there can be neither economic production nor markets, and vice versa. 2) Demographic reproduction, which has both micro- and macro-level analogues, both responds to, and influences, economic production, and vice versa. 3) The productive and reproductive dimensions of human existence (which together comprise total social production) are fundamentally interdependent. 4) Where different ethnic groups have differing relationships with economic production, their demographic regimes are also likely to be different, and vice versa. 5) The differing outcomes of demographic reproduction, such as differing ethnic group age structures, and their sub-components, such as the timing of family formation, family type and size, have the potential to interact with structural and/or policy-related factors to the advantage or disadvantage of one or other group.

Drawing on these premises, this thesis applies a total social production perspective to the ethnic stratification of the Maori and European populations of New Zealand.

1.1 ELABORATING THE PROBLEM

Despite New Zealand's long held and widely promulgated ideology of egalitarianism, a significant body of literature attests to the fact that in the 1990s, the Maori Ethnic Group (comprising 13 per cent of the total population, hereafter referred to as Maori) remains disproportionately over-represented in the lower levels of all key socio-economic and demographic indicators. There is also considerable evidence to suggest that disparities between Maori and the European-origin population (comprising 80 per cent of the total population, hereafter referred to as European) have increased over recent years, as successive New Zealand governments have introduced 'the most comprehensive free-market reform program ever undertaken by an OECD country' (Shirley 1993:1). Significant amongst these reforms has been a shift from concerns with

social equity, where attempts were made by the state to ameliorate underlying inequalities between Maori and European (and males and females), to concerns with fiscal efficacy, where market forces are viewed by the state as being the most desirable determiner of social well-being and outcomes (Shipley et al. 1991:12; cf. Boston and Dalziel 1992; Kelsey and O'Brien 1994; Dalziel and Higgins 1996; Easton 1997a:44-53; Dalziel 1997).[1]

Many intuitively plausible explanations—which are elaborated in the following chapters—are given for the underlying disparities. For example, a number of Marxist-oriented analyses identify Maori and European as having relationships characterised by *class* (Bedggood 1979, 1980; Davis 1982; Wilkes, Davis, Tait and Chrisp 1985), *eth-class* (Macpherson 1977; Trlin 1979), and *class fractions* (Phizacklea and Miles 1980; Spoonley 1982, 1988; Miles and Spoonley 1985; Loomis 1990). Common to all is that Maori disproportionately comprise the working class and the reserve army of labour (the unemployed), that 'racial' identification is significant, and that economic, political and ideological factors contribute to the maintenance of inequality. Where the studies differ is in their interpretation of the potential for change, ranging on a continuum from a transitional or temporary failure of the Maori and European working classes to develop a common class consciousness and thus to bring about collective social action, to self-perpetuating situations of relative permanency.

Similarly, neo-Weberian premises such as internal colonialism (for New Zealand, see especially Pearson and Thorns 1983; Pearson 1988) hold that once a cultural (or ethnic, or racial) division of labour is established, as occurred in New Zealand during the early years of colonisation, the resulting divisions become largely self-maintaining. From this perspective, the maintenance of inequality is due to deeply entrenched institutional practices, often referred to as institutional racism, which—often unintentionally—continue to discriminate against the colonised population long after the more direct forms of racism have disappeared.

At a more empirical level, although tending to support the theory of dual labour markets, it is equally valid to argue that the contemporary work-place requires an increasingly skilled and accredited workforce (see Harris 1995 for a comprehensive

[1] See also Spoonley 1982, 1988:87; Brosnan 1984, 1987; Douglas 1985, 1986; Waldegrave and Coventry 1987; Royal Commission on Social Policy 1988a; Butterworth and Mako 1989; Callister 1989; Social Monitoring Group 1989; Brosnan and Wilson 1989; Shirley, Easton, Briar and Chatterjee 1990; Walker 1990; Dalziel 1991a, 1991b; Shirley 1993; St.John 1992, 1994; Novitz and Wilmott 1992; Easton 1995a.

review on New Zealand). For a variety of reasons, which are elaborated in the following chapters, Maori have lower levels of qualifications than do their European counterparts. Largely as a result of this factor, Maori have been over-represented in low-skilled occupations, and in those industries that have been most affected by economic restructuring. As Maori gain qualifications, it is expected that these differentials will decrease (Harker 1990:201). However, it must be noted that others (Wilson 1979; Messina, Fraga, Rhodebeck and Wright 1992) have argued that despite improving qualification levels, occupational disparities between Maori and European continue to grow.

A further broadly acknowledged—if seldom empirically demonstrated—factor contributing to these disparities is the relative age structures of the Maori and European populations. The median age of the Maori population is currently 21 years, whilst that of European is 34 years. Conventionally, this very significant demographic differential is invoked as explanation for a large portion of the structural differentials. Income is generally highest for people around the middle and upper years of life, of whom the European population has a greater proportion. Unemployment, a phenomenon which is currently highest for young people, sees proportionately more Maori exposed to its risk, and so on.

However, in both of these scenarios a number of factors are confounded. For example, although the European population has a higher mean total income by virtue of its age structure, higher incomes are also correlated with higher levels of educational qualifications. For the most part, such qualifications are gained at the younger adult ages, where greater and increasing proportions of Maori are currently to be found. A younger population may also experience higher unemployment than an older population, but ongoing technological and structural change in the workplace mean that its skills are likely to be more in demand than those of the latter, resulting in proportionately more of its members having the potential to move into the labour force, whilst those of the older population are more likely to move out. Similarly, a population which is having most of its children at younger ages (such as Maori)[2] and thus deriving a shorter intergenerational replacement period than a population that is experiencing older childbearing (such as European), has the potential to see each successive generation educated at a faster rate, thus more rapidly increasing its cultural capital (qualification

[2] Almost half of Maori childbearing is accounted for by women under the age of 24, whilst for European the equivalent proportion is just over one quarter. This issue is elaborated more fully in Chapter 3.

base). Last but not least, the age structures of the Maori and European populations have been slowly converging for some years. Each of these factors should be mitigating against relative increases in Maori unemployment, and generating a relative increase in Maori mean total income. Thus, differences in age-structure as part explanation for different group-level socio-economic outcomes, and particularly for *trends* in socio-economic differentials, cannot be invoked uncritically.

Indeed, more important than ethnic differences in age structure in generating group-level differences in income and labour force status may be the manner in which such demographic differences simultaneously expose the Maori and European populations to certain otherwise-egalitarian (ethnically-neutral) period factors, such as political-economic restructuring, changes in the opportunity structure, and changes in wage and income support policies. An example can be seen in the 1991 raising of the age of eligibility for the adult rate of unemployment benefit, from 20 to 25 years—a change in income support which, very importantly, post-dates the period covered by this thesis. At that time, there were 0.4 Maori 15-24 year olds to every Maori aged 15-64, whilst the corresponding ratio for the non-Maori population was 0.2. Thus, even if the unemployment-population ratios of Maori and European youth had been identical, the policy would have had a disproportionate impact on the Maori population by virtue of its age structure alone (Jackson 1994a; 1995a). As it was, the Maori youth unemployment to population ratio was double that of their European counterparts. Incorporating the multiplicative effects of age structure, the relative impact of the above policy on the Maori population would therefore have been closer to 4 times greater (2 x 2) than that experienced by European, not twice as great as the unemployment ratios themselves imply (see also Easton 1995b:207).

The combined potential of age structure, unemployment, and this particular policy to increase existing ethnic inequalities did not stop there. The lowered unemployment benefits, which for unemployed 20-24 year olds represented a 25 per cent reduction in income, resulted in a substantial shift of fiscal responsibility from the state to the families of those affected. At 15-24 years, the ratio of Maori to those at the parental ages most likely to be affected (35-54 years, see Jackson 1994a:47) was exactly double that for European. That is to say, there were 1.22 Maori aged 15-24 years for every Maori aged 35-54; for the European population the corresponding figure was 0.61 (Jackson 1994a:85). Together, the impact of the age structure-unemployment-policy triad for the Maori population might thus again have been closer to a factor of four: both

Maori youth unemployment, and the Maori 'parent-youth' ratio, double that of European.[3] Furthermore, because unemployment is inversely correlated with age; because unemployment is higher for Maori than European at all ages; and because Maori parents are on average several years younger than their European counterparts (Jackson, Pool and Cheung 1994:40-41), those Maori parents who were suddenly disproportionately charged with these extra fiscal responsibilities were themselves also disproportionately affected by unemployment (Jackson 1994a:151-5, 1995a).

The complex nature of these inter-related processes and their implications for an increase *or a decrease* in ethnic stratification cannot be adequately conceptualised in the absence of a demographic framework. Certainly demographic factors are not something that market forces, premised on notions of egalitarianism, can readily accommodate. Before developing this thesis further, therefore, it is necessary to say a few words about the ideology of egalitarianism and its potential for reproducing—and possibly exacerbating—ethnic stratification.

Briefly stated, the ideology of egalitarianism has two faces. On the one hand it says that everyone should be treated the same; on the other, it discriminates against those who, because populations are heterogenously comprised, are different. Acknowledged by Aristotle as long ago as 2000 years, this paradox is explored in the contemporary setting by Saunders (1990:43-44). Saunders argues that there are at least three different meanings of equality: legal equality (where everyone is equal under the law), equality of opportunity (access), and equality of outcome. Because people (and sub-groups) are different, the only way of achieving either equality of opportunity or of outcome is by treating people (and sub-groups) differently, thus discriminating and thereby negating the first type of equality. Discrimination, in turn, may be positive (for example, equity-based) or negative (e.g. racism), intended or unintended. Myers (1993:176-7), for example, argues the importance of distinguishing between disparate treatment (discriminatory actions) and disparate impact (discriminatory outcomes). Disparate treatment, he argues, can range from *ad hoc* decisions that are not based on clearly defined premises; through discriminatory application of rules (taken here to include policies) that are not in and of themselves discriminatory, but result in disparate treatment of otherwise identical individuals; to situations where the rule was formulated

[3] Intermarriage means that these proportions will not accurately reflect Maori or European 'dependency' at the level of the family. The issue is discussed in more detail in Chapters 4 and 5.

with the explicit intention of discriminating according to certain criteria. Each of these approaches can result in disparate outcomes.

To these arguments, which tend to be concerned with 'racial', gender, social disability and socio-economic characteristics, this thesis proposes group-level differences in demographic composition. That is to say, differing ethnic group age structures, and differing reproductive dynamics in general, can result in disparate outcomes that are, essentially, of the unintentional kind.

Important in these respects are the arguments of American economist Richard Easterlin (1987a), whose 'birth and fortune' hypothesis holds that cohort size—as opposed to age structure *per se*—is a potential cause of inequality. Large cohorts, Easterlin argues, experience greater competition than small cohorts for scarce resources, such as employment and earnings, and as a result the former both delay their family formation to later in the life cycle, and have smaller families, than smaller cohorts. Consequently, large cohorts give rise to small cohorts, and vice versa, the demographic-economic interactions setting in motion a self-generating sequence of waves of population, and, potentially, waves of inequality.

Although several aspects of Easterlin's arguments are antithetical to classic understandings of demographic change (elaborated more fully in Chapter 3), and moreover, pay almost no attention to the role of period factors (in particular, changes in the political dimension), his proposed relationship between economic factors and demographic change *per se* reflects the consensus. That is to say, both Easterlin and, by and large, the demographic patrimony, hold that socio-economic change is a primary determinant of demographic change, and that in turn, demographic change is a primary determinant of socio-economic change. Although Easterlin alluded to the application of his arguments at the level of the ethnic group only in passing (1987a:161), it is plausible that similar dynamics hold true, and may be especially applicable to the situation of ethnic stratification.

In order to comprehensively address the issue of ethnic stratification in New Zealand, then, a number of factors must be taken into account. Firstly there is the historical situation, whereby the New Zealand labour market and most factors associated with it are argued to have become cleavaged along ethnic boundaries, resulting in a type of race-class nexus. Secondly there are the dual labour force arguments, which suggest that once the Maori and European populations achieve unity in qualification levels, other structural equalities will follow. Thirdly there are the contemporary age composition and

other underlying demographic factors *and their antecedents*. Fourthly there is the ever-changing political economy with its smorgasbord of policies, and with which demographic factors can be presumed to interact.

1.2 THESIS OUTLINE

The thesis is divided into three parts. The first part (comprised of Chapters 1-5) develops and operationalises the central arguments; the second (Chapters 6-11) creates a comprehensive profile of ethnic stratification and its associated demographic dynamics; and the third (Chapter 12) considers the contributions of the total social production perspective. The study covers both historical and contemporary periods, but its primary focus is the 1976-1991 period during which the New Zealand economy underwent major economic restructuring.

Following this section, Chapter 1 concludes with a summary of the intended contributions of the thesis. In Chapters 2-5, the key conceptual, theoretical and methodological issues are elaborated: Chapter 2 addresses the topic of ethnic stratification, with particular attention to Hechter's (1975, 1978) theory of a cultural division of labour; Chapter 3 addresses the topic of total social production, locating the so-termed 'Easterlin hypothesis' under this genre; Chapter 4 develops the thesis's empirical methodology and analytical framework; and Chapter 5 describes and critiques the data sources.

In addition to expanding on a number of key concepts, such as ethnicity, stratification, class, and demographic transition, an important component of Part I is discussion of the classification 'Maori'. Four issues (elaborated in Chapter 5), which need to be acknowledged here, are paramount. First is that the Maori Ethnic Group is a collective category developed for statistical purposes. As such it does not necessarily correspond to the way in which those covered by the definition view themselves. Second is that intermarriage and inter-ethnic conjugality may further undermine the application of the classification 'Maori', even to individuals. Third is that the criteria used to define ethnic classification have changed over time, resulting in significant data discontinuities. Fourth is that since approximately 50 per cent of families classified Maori have one parent who is non-Maori (a finding of Chapter 5), it is difficult to conceptualise and operationalise family data within a stratification framework. Accordingly, the unit of analysis for this thesis is, more appropriately, the aggregate experience of individuals,

meaning that factors of significance to some aspects of the overall analysis, such as family type and size, must be incorporated in an indirect rather than direct sense.

Also in Part I, the thesis's four key analytical techniques are detailed, amongst which two—component analysis and cohort analysis—are of particular importance to the total social production perspective. The former (component analysis) was chosen over normative standardisation techniques for its elegance in separating out—yet keeping visible—the proportion of the crude (unstandardised) percentage difference between two groups (in this case, Maori and European) for any given variable that is due to either age structure or the underlying ('true' or unexplained) difference that remains once age structure has been controlled. This is a valuable index in that policy responses to inequality—when developed—are typically addressed at crude indices, whereas component analysis provides an opportunity to identify and target more specific objectives. At the same time, however, such an approach by necessity focuses the analysis on experience *within* each given category. It thereby deflects attention from the effect of the size of the category on the experience of the ethnic group as a whole, a factor that must be acknowledged separately.

Similarly, cohort analysis, which traces the experience of birth cohorts as they age, also sacrifices the size-effect coming from each compositional category. On the other hand, it provides an opportunity to assess the universality or otherwise of the macro-level trends, and thereby their policy implications. That is to say, cohort analysis permits the assessment of whether or not trends demonstrated at the macro-level have been similarly experienced by all cohorts, or are unique to individual cohorts, permitting both interpretation and policy responses to be more refined. Unfortunately, because of data limitations, these two techniques can be applied only to data for the 1976-1991 or 1981-1991 periods.

Part II is developed around six empirical chapters. The first of these, Chapter 6, provides an historical overview of the development of ethnic stratification and demographic differentials in New Zealand. It focuses on the period 1840-1940, and explores the extent to which the developing demographic differentials were dependent variables of the processes of colonisation/ethnic stratification. Each of Chapters 7-10 focus on a conventional indicator of ethnic stratification, beginning with an historical overview and then undertaking the component and cohort analyses noted above. Chapter 7 examines ethnic differentials in labour force status and employment status; Chapter 8 examines industrial and occupational differentials; Chapter 9 examines

educational differentials, and Chapter 10 examines income differentials. In each of these four chapters, demographic reproduction—manifested primarily as age structure—is treated as an independent variable of ethnic inequality, and the question is asked, to what extent do ethnic differences in age structure add to, or reduce, the relative concentration of one or other ethnic group in each given socio-economic category. In Chapter 11, a limited exploration of the Easterlin hypothesis in a New Zealand setting—and in an ethnic context within that setting—is undertaken. In that chapter, cohort size, rather than age structure *per se*, is treated as an independent variable of inequality. In addition, the chapter also examines the extent to which both cohort size and socio-economic inequality are linked with the timing of family formation, thereby returning the analysis to a focus on demographic factors as dependent variables.

Chapter 12 concludes the thesis by considering the findings of Part II in relation to the theoretical and other premises outlined in Part I.

1.3 CONTRIBUTIONS OF THIS THESIS

This thesis makes three key contributions. First, it argues that demographic reproduction is not marginal to either productive relations or ethnic stratification, but instead represents an interdependent dynamic that must be centrally incorporated into the analysis of ethnic stratification, ideally carried out under the auspices of total social production. In applying these essentially theoretical premises to empirical data by way of component and cohort analyses, the thesis has the potential to broaden understandings of the processes associated with the persistence of ethnic stratification, and thereby to contribute to its amelioration. Second, in the process, the thesis creates a comprehensive historical empirical profile of ethnic stratification in New Zealand. An important aspect of this compilation is the systematic identification of key points of continuity and discontinuity. Since no similar study exists under one cover, the thesis can be considered a benchmark study. Third, just as demographic forces have received minimal attention in the stratification literature, so too has ethnic stratification been a muted theme in the demographic literature (Sullivan 1977:165). In linking the two patrimonies, this thesis makes a contribution to current understandings of demographic change in a setting where the colonisation of an indigenous group has been a structuring force.

2

ETHNIC STRATIFICATION: CONCEPTS AND THEORIES

> *...there is little agreement on how best to integrate racial or ethnic differences into traditional models of stratification, if indeed, such a task is seen as desirable in the first place* (Pearson and Thorns 1983:191).

2.0 INTRODUCTION

In Chapter 1 the argument that demographic replacement has been more or less ignored in studies of ethnic stratification was introduced. Little, however, could be said there about the two central concepts—ethnic stratification and demographic reproduction—nor about the theoretical premises that underlie either them or the overall argument. This chapter addresses the first of these concepts, integrating ideas about ethnic stratification into a New Zealand setting, and touching on their methodological implications. Importantly, by way of responding to the above quote from Pearson and Thorns, the chapter is more concerned with understanding why and how the various concepts and theories fit together, than with how they are used in this thesis, which is the concern of Chapters 4 and 5. The chapter concludes by linking the overall discussion to the second part of the argument, that of demographic reproduction, which is itself elaborated in the following chapter.

2.1 ETHNIC STRATIFICATION

Ethnic stratification describes the division of important aspects of a society, particularly aspects of its economic production, along ethnic boundaries. It is not, however, an unproblematic concept. Not only are there many different ideas about what constitutes both ethnicity and stratification, but when the two are combined it is often also necessary to consider the ethnicity-race nexus. This is because the concept of ethnicity has, in many instances, merely become a substitute for the now scientifically discredited concept of race, while it was the latter that structured and validated not only the initial, but also many contemporary social relations between ethnic groups. This is certainly the case in New Zealand, where much of the empirical data for this thesis,

although compiled on the census basis of self-ascribed ethnic group affiliation, traces back at the minor classification level to its earlier racial categories. Indeed, the concept of race—which was initially used to legitimise colonial relations between Maori and European—has been perpetuated into the 1990s, through widespread official (for example, police), social and media usage, and through state-level bodies and policies such as the Office of the Race Relations Conciliator and the Race Relations Act.

In addition, since ethnicity is generally defined on the basis of cultural criteria, the phenomenon of ethnic stratification cannot be understood without reference also to culture. Similar must be said of the concept of stratification, which cannot be understood without reference to class. The following discussion, therefore, links ethnicity with stratification, through the concepts of race, culture, and class. It then draws these together with reference to Hechter's (1975) notion of a cultural division of labour.

2.1.1 Race, Racism and Race Relations:

Because the concept of race predates—and, it is widely argued, continues to inform—that of ethnicity, this chapter begins with it. Race refers to the biological classification of discrete groups which share genetically inherited physical characteristics, most notably skin colour. It is not possible to identify precisely when the concept was first used to hierarchically categorise human diversity (Banton 1983:3-5). However, that it was used in such a manner by many of the European colonists and their descendants with whom this thesis is concerned, and that ethnocentrism—the belief that one's own race or culture is superior to all others—structured that ideology, is today a broadly acknowledged fact. Importantly, the supposed inferiority and immutability of the physical characteristics encountered by European colonisers (and missionaries) were also typically ascribed to the group's social and cultural facets, such as social and economic organisation, intellectual beliefs and development. Together the complex gave rise to the idea of the 'great chain of being', a socio-religious hierarchy in which God was placed at the top, priests above ordinary humans, and Europeans (Caucasoids) above Asians (Mongoloids), Negroes and Aboriginals (sub-divisions of the Ethiopian race). Through the processes of competition and selection it was believed that the more inferior races would eventually give way to the superior, an ideology which simultaneously provided justification for colonisation, and for 'smoothing the dying pillow' of aboriginal populations such as Maori (Featherston, cited in Buller 1884:54). A

racial group was thus not only defined on the basis of physical criteria, but it was also defined ideologically and politically.

A substantial literature now rejects the biological concept of race as having any scientific validity (UNESCO 1975). The two principle reasons for this were scientific recognition of the large extent of interbreeding between racial groups, which renders the idea of fixed boundaries meaningless; and the fact that intra-racial variation is often greater than inter-racial (Eriksen 1993:4). Nevertheless, as Eriksen (1993:4) argues, what is important is the continuing social and cultural relevance of the idea that race—and thereby racial intellectual differences—exists: it is the *idea*, not its validity, that informs people's beliefs and actions in relation to it.

Important amongst these actions (and inactions) are negative discrimination on the grounds of perceived race (racism), and failure to acknowledge the existence and implications of institutional racism, that is, the 'way in which groups are differentially treated by institutions as a result of a [culturally biased] set of organisational policies and procedures' (Spoonley 1988:24). In terms of the former, a (perceived) racial group may be advantaged or disadvantaged by the actions of 'gatekeepers'—individuals who control access to resources such as employment, health, housing or justice. In terms of the latter, racist outcomes—which, as implied in the previous chapter, are often unintentional—may ensue from policies and practices that reflect the values and beliefs of the dominant group, and which, usually inadvertently, systematically advantage members of the dominant group and disadvantage those of others. The valuing of academically acquired credentials over *matauranga* (knowledge or wisdom, according to Maori values) is one such example. Also very important is the notion of 'self fulfilling prophesy', whereby the beliefs held about the inferior capabilities of a group—or an individual of that group—first assist in the establishment of the systems of disadvantage, and are then used to justify those beliefs when, by the dominant ideology's standards, those groups or individuals fail.

Irrespective of whether or not racism is involved, the term race relations refers to such relationships. These relationships arise through processes of inclusion and exclusion based, generally, on competition over resources. Initially, it was the biological characteristics of each group that were believed to influence the relations between the members of each group, but later this gave way—at least at an academic level—to an understanding of the role of articulating political and economic structures (Banton 1983:32). Coinciding with the latter came the shift to the concept of ethnicity.

2.1.2 Ethnicity and Ethnic Relations:

In contrast to the biological basis and supposed immutability of race, ethnicity is a social category, defined on the basis of cultural criteria, self- and group-identity (Glazer and Moynihan 1963; Banton 1967; Cohen 1978). Although ethnic groups tend to have myths of a common origin and to encourage endogamy (Eriksen 1993:12), flux, process, ambiguity, and complexity are also central features (p.9). Indeed, most importantly, ethnic groups develop out of mutual contact. Like social classes, they do not exist in isolation. To speak of an ethnic group in total isolation has been likened to the sound of one hand clapping (Eriksen 1993:9). Drawing on a detailed investigation of the ways in which the concept is currently used, Eriksen (1993:12) sees ethnicity as:

> an aspect of social relationships between agents who consider themselves as culturally distinctive from members of other groups with whom they have a minimum of regular interaction.

As such, contemporary concepts of ethnicity emphasise relational dynamics, and in the manner of Barth (1969) are focused very much on the boundaries that delimit the ethnic group, rather than on the 'cultural stuff' they enclose (Eriksen 1993:37). That said, as Barth explained, an ethnic boundary is a site of inclusion/exclusion that is subject to continuous social and political negotiation. As a result it is not immutably fixed. Both the ethnic groups and the individuals of which they are comprised may identify as belonging to (or being affiliated with) different groups at different points in time, as a result of their location in, for example, competition over resources or political power. Of considerable importance to this argument is that the boundaries between ethnic groups do not always correspond with cultural boundaries. Some ethnic groups can be culturally similar, yet have highly volatile relationships. In a similar manner to the argument about perceptions concerning race, it is the *perception* that there are important cultural differences, and the making of these socially relevant, that gives a social relationship its ethnic element (Eriksen 1993:12).

The arguments suggest, therefore, that what is contained *within* an ethnic boundary may certainly characterise the actions, values, beliefs etc. of the ethnic group, but it does not create or constitute that group on its own. Rather, the group is created and constituted via relations *between* such groups ('we' are this, because 'we' are not that), and those relations are themselves created and constituted through that social contact, their importance varying according to the situation (Eriksen 1993:18).

Certainly it seems to be dynamics at the interface between ethnic groups that are preventing the 'American melting-pot' (Glazer and Moynihan 1963) from occurring, an argument that may also be applicable to ideas about 'the distant end-result of [racial] integration' ('a final blending') between Maori and *pakeha* (meaning non-Maori, usually of European origin) (Booth and Hunn 1962:3). Rejecting the idea that Maori should assimilate with pakeha, that is, that Maori 'should cast away their distinctive characteristics and immediately adopt the ways of pakeha',[1] the Department of Maori Affairs (pp. 2-3) in the 1960s called for an integration in which 'a whole new culture [would result from] the combination and adaptation of the two pre-existing cultures'. However, in New Zealand as elsewhere, rather than eradicating ethnic differences, the increasing association of such ethnic groups throughout the twentieth century seems to have resulted in a strengthening of ethnic identities, increasingly evidenced in the widespread assertion of difference, the 'reinvention of tradition' (Keesing 1989), and the various types of ethnic mobilisation and nationalism (Pearson 1988).

Conversely, another aspect to the argument of fluidity between ethnic groups is the issue of intermarriage—or inter-ethnic partnering (which is discussed more fully in Chapter 5), whereby it may become problematic for an individual to identify as belonging to one or another ethnic group, or for that individual to be acknowledged by others as belonging. This represents a very pertinent situation in contemporary New Zealand, where the demographic outcome (births) of not only inter-ethnic, but also inter-tribal, relationships are resulting in intra-ethnic tensions over the division of *raupatu* (compensation for the illegal dispossession of Maori from their tribal lands during the period of colonisation) recently wrested from the State. Indeed, the situation highlights an issue which is of considerable importance to this thesis, but because of lack of appropriate data cannot be examined further. This is that the category 'Maori Ethnic Group' is applied to a population which defines itself in terms of its major (*iwi* and *hapu*) and minor (*whanau*) sub-divisions,[2] and not as a single compound. As a result of historical tensions between some of these groups, significant intra-ethnic differences—perhaps even stratification—exist, and undoubtedly underlie many of the inter-ethnic differences that are the subject of this thesis.

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[1] Thus in reality referring to cultural rather than racial characteristics.

[2] A *whanau* is an extended family group; a *hapu* (tribal group) is comprised of a number of whanau; and an *iwi* is comprised of a number of hapu which trace their origins to a particular *waka* (canoe).

Like the shift from biological to cultural criteria for the defining of certain social groups, therefore, the focus on the relational dynamics of ethnicity represents an important development for understanding the maintenance of ethnic groups, ethnic relations, and thus, ethnic stratification. This is all the more so because similar relational arguments have been applied to the cultural factors upon which the concept of ethnicity is premised. Reflecting the general position of anthropologists in the late 1980s, Keesing (1989:16), for example, argued that culture is neither a static nor autonomous phenomenon, but is achieved through a constant process of negotiation between symbolic structures and historical origins. Similarly, Lilley (1990:173-184) argued that the popular view that either ethnic groups or 'cultures' exist—or have ever existed—as homeostatic, closed systems, which disintegrate on contact with each other, is untenable. Instead, interaction between groups brings about exposure to new ideas, the new ideas build upon the existing ideas, and the outcome is a culturally-specific (to each group), dialectical synthesis (Worsley 1984:36). What, then, is culture?

2.1.3 Culture and Ethnic Stratification:

As with race and ethnicity, there are many and varied understandings of culture. In the 1950s, approximately 300 definitions had been documented (Kroeber and Kluckhohn 1952; Eriksen 1993:10). Instead of attempting to record here what would amount to only a small selection—and centrally acknowledging that differing theoretical perspectives preclude any notion of a single anthropology—the issue is approached instead by briefly reviewing how the concept of culture is currently used (and misused), and how these understandings relate to the foregoing.

In general, contemporary anthropologists view culture as a complex system of shared meanings, which, depending upon the theoretical proclivities of the anthropologist, may be structured around an organising principle such as religion, kinship, or the market. Both meanings and principles, which are often implicit or only subconsciously understood, involve ideas about social, economic and political organisation, and are evidenced in each society's norms, values, rules, structures, and institutions, as well as in its material objects. The question of whether or not economic factors—the production of subsistence—should be given primacy remains an important debate between anthropologists of the various Marxist traditions, as well as others, but either way there is widespread acceptance that culture represents the totality of a society's ideas and institutions, its entire infra- and super-structure: it is not an

institution of a society, amenable to reductionist methodologies, as is often implied in non-anthropological literature (see especially the critique by Kertzer 1995). The position is perhaps best summed up by Smith (1988:x), who proposes that:

> People do not insure their subsistence or their family wage and then go about behaving culturally and ideologically. The question is not what is a product of the market or the labour process and what is cultural, but how the market and the labour processes are cultural and shape the way we live our lives.

A second area of general agreement between contemporary anthropologists is that cultural ideas are not just passively absorbed by those born into (or entering) the culture, but are also interacted with—both from within and without—contributing to cultural change. While anthropological views of culture have always been holistic, this focus on the interaction between structure (the political economy and its policies), agency (the actor), and the wider world (globalisation), which parallels much of the foregoing discussion, represents a fairly recent shift in the anthropological discourse. Prior to the 1960s, when the dynamic nature of culture came to be more fully appreciated, most of anthropology's focus was on culture as a constraint: people acted in accordance with their culture. This was the era of Parsonian (and Malinowskian) functionalism, the theoretical paradigm that saw each culture comprised of internal components that were functionally necessary to that culture's continuation, and which gave surprisingly little recognition to the cultural implications of interactions between geographically coexisting (and often trading, warring, and exogamously marrying) groups.

Importantly, in relation to ethnic stratification, it can be argued that a system of shared cultural meanings centrally concerns the allocation and legitimisation of social roles: who does what, especially in the processes of achieving subsistence and demographic reproduction; who is permitted to be in control (or make decisions on behalf of others); and how property rights, such as control over the results of production (both economic and demographic), are assigned. Historically, the major social roles have been assigned by gender (as in the universal sexual division of labour), age (overtly in tribal and kinship societies, covertly in many capitalist/bureacratic structures), class (who works, who receives), skin colour (racial and ethnic divisions appear to be almost as universal as sexual ones), and caste (although often viewed as reflecting religious beliefs, caste divisions are essentially productive roles, determining who touches what,

does what, and who gives to or receives from whom). The allocation and legitimisation of social roles on the basis of educational qualifications and merit, rather than ascription, is a relative newcomer to the different cultural systems of the world, and is as yet by no means universal, even in mainstream capitalism.

Centrally related to the issue of role allocation—and the bridge that can be argued to unite race, ethnicity, culture and stratification—is the concept of ethnocentrism, the ideological belief that one's own group and cultural ways of doing things are superior. An often overlooked feature of ethnocentrism is the set of ideas about whether or not the pursuit of economic subsistence (and the demographic replacement that sustains it) should be a collective or individual responsibility; whether an individual's success or failure lies with them or elsewhere, and so on. From this perspective it is important to reflect that most of the beliefs and values of the (West) European way of doing things 'affirm the central values of capitalism and competition' (Spoonley 1988:20). Spoonley points out that this 'arrogantly assumes that the values of European capitalism are universally desired values that constitute the norm and impart obvious benefits'. (They are also very much 'male' views, but in terms of ethnic stratification *per se* this is a digression.)

Indeed, it is not simply the beliefs, but the power to institutionalise those beliefs, that leads to ethnic stratification. As several writers have noted, the early colonial struggles in New Zealand were not simply over resources, but also over whose ideology would predominate (Ministerial Advisory Committee 1986:5-7; Oliver 1988:4-5). Because this argument can be readily substantiated in the New Zealand setting (see Chapter 6), its more conceptual and theoretical aspects can be left aside. For now, it is equally important to explore the argument that, once begun, the processes of stratification, like those of racism and class have the potential to develop their own impetus. Accordingly, ethnic stratification needs now to be distinguished from class.

2.1.4 Ethnic Stratification and Class:

The two major perspectives on class derive from Karl Marx and Max Weber, both of whom treated stratification as a conflict over power. Where they differed is that Marx emphasised productive relationships as giving rise to stratification, and Weber, the market.

From an orthodox Marxist perspective, the emergence and persistence of class is centrally located in the system of capitalist production. Class is primarily understood in

terms of *class relations*, these being the relationship between groups of people and the means of production. Orthodox Marxism identifies three primary classes, two of which are polarised as a result of their fundamentally opposite relationship to the means of production, one as owners (the *bourgeoisie*), the other as workers (the *proletariat*). The third class is the self-employed but non-employing *petit-bourgeoisie*, which is recognised along with two other minor classes, the unemployed and under-employed *lumpenproletariat*, and the aristocracy, who gain their wealth from various forms of rent. More recently, neo-Marxists have elaborated the characteristics of several additional *contradictory class locations*, such as those who are simultaneously employed but, by virtue of the ownership of 'exploitation assets', such as qualifications or a place in the bureacratic hierarchy, extract a kind of rent from their subordinates (e.g. Wright 1976, 1985). The development is significant, in that it shifts from a emphasis on demand (for labour), to one in which supply (especially of skills) is a factor.

Central to Marxist frameworks are also the concepts of *class structure*, referring to classes as empty structures into which people enter and which are continuously re-created independently of the specific actors who fill them; *class formation*, referring to the social relations between individuals within these classes, which in turn determines the development of *class consciousness*; and *class struggle*, this being the tension between the classes, and the outcome of class consciousness (Wright 1985:10). For Marx this struggle was the motor of history, and its manifestation in revolutionary action caused each mode of production to be replaced by a new one.

Conversely, from a Weberian perspective, class is theorised in terms of market relations, rather than relations of production. Weber agreed with Marx that ownership of property (not only capital, but also education and skills) gave individuals an advantage, but also saw social status and political power as equally involved. Weber also believed that the type of property owned—for example, the type of qualifications or skills—created both supply and demand for that property, and thus differentiation in reward. The similarities between these premises and those of neo-Marxists such as Wright (1976, 1985) are striking.

For Weber, class arising from economic factors was therefore but one of three key social differentiating forces, the others being the *status group* (or *stand*, with membership based on group affiliation, such as religion or ethnicity) and *party* (political affiliation and lobbying power). Because '[a] status group typically includes individuals of different classes, whereas a class typically includes individuals of different status

groups' (Hechter 1978:293-4), Weber saw these locations as cross-cutting, and did not believe that classes would be able to develop the shared interests that would lead to revolutionary action. By contrast, he saw status groups and party as providing alternative bases for group formation that were ostensibly independent of the relations of production.

Applying both Marxian and Weberian notions of class to the issue of ethnic stratification, Eriksen (1983:7) argues that class and ethnic differences are very different because social class always involves systems of social ranking, whereas ethnicity may not. That is to say, some polyethnic societies are indeed ranked according to ethnic membership, but, as implied above, the rankings refer first and foremost to imputed cultural or racial differences, not to the ownership of property or an achieved status. Certainly this is the case in New Zealand, where the ownership of property and the contemporary relations of production are disproportionately, but not entirely, divided along ethnic boundaries. That said, there can be little dispute that the proportion of Maori in the working class is greater than the corresponding proportion of European (Wilkes, Davis, Tait, and Chrisp 1985:26).

However, it does not follow that the analytical frameworks of Marx and Weber are irrelevant to the analysis of ethnic stratification. Hechter (1975, 1978:294), for example, argued that such analysis may be better served by discarding the unidimensional concepts of each and incorporating them into a new whole, *a cultural division of labour*. This is the 'internal colonialism' argument (based on the arguments of Blauner 1972) that the processes of European colonisation gave rise to 'a system of stratification where objective cultural distinctions are superimposed upon class lines' (Hechter 1975:30). Focusing equally on class, the status group, and party (political power), the argument holds that once such a group is assigned to the disadvantaged position in a society it will stay there. Reflecting the relational views on ethnicity and culture outlined above, such an argument directly opposes the diffusionist (melting pot) position that co-existing ethnic groups will eventually fully assimilate.

Because the internal colonialism model—which is outlined below—has already been substantiated in the New Zealand context (Pearson and Thorns 1983; Pearson 1988), and because its use offers the opportunity to simultaneously consider both the diffusionist and separationist arguments,[3] it is these arguments that are the focus of

[3] That is, the degree to which Maori and European are integrated, and the degree to which they are not.

attention for the remainder of this chapter. Before elaborating Hechter's arguments, however, it is worth first clearly locating the tradition in the stratification literature, and then briefly examining the few existing theoretically-derived perspectives on European and Maori relationships.

Pearson and Thorns (1983:192-3) argue that in fact not two but three broad traditions can be discerned in the stratification literature: 'pure', 'pluralistic', and what might be termed 'permanently self-sustaining' variants. The pure form, they argue, and which they note represents quite paradoxical positions, sees racial (or ethnic) differences as strictly subordinate to class. On the one side, racial and ethnic differences are viewed as residual or lag effects of class systems of inequality. The argument holds that these differences will eventually be subsumed by socio-economic status, and presumably class consciousness, once educational and other non-ascriptive factors approach unity.[4] On the other side, in fairly orthodox Marxist terms, racial and ethnic differences are seen as dysfunctional for the formation of the proletariat as a *class for itself*. That is to say, race and ethnicity present obstacles to the development of class consciousness, but merely reflect a transitional stage that will eventually give way to class.

The second variant, which Lockwood (1970, cited in Pearson and Thorns 1983:193) suggests should come under the rubric of pluralism, sees racial and ethnic differences—both economic and ideological—as so embedded in the social fabric of certain societies that any conflicts arising from them are only going to promote changes *within* the system, rather than *of* the system itself. From this perspective, the ideological and political dimensions assume equal importance with the economic, and, although both structure and agency (objective and subjective boundary formation processes) are involved in the long term maintenance of ethnic stratification, the role of the dominant class remains paramount.

Although the pluralist position therefore sees racial and ethnic differences as extremely persistent, it differs from the third variant in that the latter sees the differences as permanently self-reproducing—similar to, but distinct from, class. In these studies, as in the second variant, the political and ideological dimensions act to maintain race and ethnic stratification through both structural and agency processes, but in doing so they create *independent* bases of social inequality. That is to say, as with racism, the

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[4] This seems to me to be a neo-Marxist approach which also incorporates dual and segmented labour market theories, the latter of which are discussed below. However, here I am recording the views of Pearson and Thorns.

inequalities no longer depend upon the active manipulation or intervention of the dominant classes, but develop a life of their own. Generally, these writers employ *class fraction* arguments in which there is almost no likelihood of the development of collective class consciousness. This variant was elaborated in the neo-Weberian approaches of Rex and Tomlinson (1979), Phizaclea and Miles (1980), and Rex (1981).

In close association with the latter—and comprising, it is argued here, a fourth position on ethnic stratification—is the work of Hechter (1975, 1978), derived from Blauner (1972). As implied above, this position holds that colonial-derived relations have their own unique dynamics which demand a more colonially-oriented framework. Importantly, as is elaborated below, the key point on which Hechter's work differs from writers of the third variant is its emphasis on the incremental development of revolutionary potential.

Excluding studies which do not make their theoretical premises explicit, the first sub-variant—the 'pure' Marxist argument that racial and ethnic differences are either residual or lag effects of class—does not appear to be represented in the New Zealand literature.[5] It may, however, be reflected in the neo-Marxist approach of Wilkes, Davis, Tait, and Chrisp (1985), which employs the 'contradictory class location' model ascribed to Wright (1976, 1985). In this study, Wilkes et al. identified considerably different class structures for Maori and pakeha. Maori, for example, were shown to be less than half as likely as pakeha to be Bourgeoisie (owners or part owners of companies employing more than ten people), and almost twice as likely to be workers (with no real supervisory functions and low or no autonomy). Maori were even less conspicuous as small employers, being only one fifth as likely as pakeha to be so classified (see also Davis 1982).[6]

Framing his argument in Marxist terms of articulating modes of production, Bedggood (1979, 1980) is responsible for most of New Zealand's work representing the second stream of the pure variant—the view that race and ethnicity present temporary obstacles to the development of class consciousness. From this perspective, Bedggood showed how Maori social and economic organisation had been overcome and destroyed

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[5] An excellent summary of the early paucity of studies on ethnic stratification and class in New Zealand can be found in Metge (1976) and Pitt (1977), and a somewhat critical review of economist's analyses of Maori economic experience over the longer term is given in Dalziel (1991a).

[6] Importantly, in relation to the arguments of this thesis, it should be noted that the study by Wilkes et al. acknowledged the potential effects of the differing age structures of the two populations. However, it neither controlled for them, nor considered their broader implications.

by the capitalist mode of production of the incoming European. Maori, he argued, were systematically dispossessed of their land and economic base, and, left with only their labour power to sell, became an almost completely proletarianised population. By contrast, the European population was disproportionately present amongst the Bourgeoisie and middle classes. Bedggood also argued that the welfare state merely masked these inequalities between Maori and European, rather than ameliorating them. From this perspective, not only were racial or ethnic differences obstacles to class consciousness, but so too was the welfare state. Whilst little appears to have been said about the latter, some aspects of Bedggood's arguments have been strongly criticised for their fundamentalism, and their failure to acknowledge important divisions within Maoridom (Parkin 1979:36, cited in Pearson and Thorns 1983:195).

Much of the remainder of New Zealand's work on ethnic stratification has been carried out under the third and fourth variants, which see ethnic stratification as a permanently self-reproducing phenomenon. Employing the class fraction arguments of the third variant, Spoonley (1982, 1988), Miles and Spoonley (1985) and Loomis (1990) focused on the political economy of migrant labour, showing how migrants (including Maori moving from rural to urban labour markets) were slotted into the different structural divisions of the labour force. Polynesians joined the disproportions of Maori in the unskilled and semi-skilled primary and secondary sector occupations; European-origin migrants joined the disproportions of European in the skilled and professional positions. All the above writers see these destinations as not merely merit-determined; ideological, political, and institutional (racism) factors were very much involved, leading to the longer term potential for ethnic differences to develop their own independent impetus and become self-sustaining (see also Macpherson (1977) and Trlin (1979) on the notion of 'eth-class').

Seemingly paralleling these arguments—although working within an entirely different discourse—are those relating to dual and segmented labour markets, explicated in New Zealand in the work of Bowie (1983a), Easton (1983a, 1991, 1995b), Brosnan and Hill (1983), and Manatu Maori (1991). By and large these studies see the relative labour market positions of Maori and European as reflecting underlying differences in qualifications, skills and experience, often exacerbated by employer-discrimination and occasionally by the actions of the state (see Harris 1995 for a comprehensive review). The outcome, disproportionate inclusion for European in the primary (advantaged) labour markets, and for Maori in the secondary/peripheral (disadvantaged) labour

markets, along with their respective financial rewards, becomes self-generating, in the former case through access to employment security, internal labour markets, and skill-updating, and in the latter case, through casual, low skilled work and disrupted employment-potential networks.

Located somewhere between the third and fourth variant is the work of Pearson and Thorns (1983). Here the more recent phase of race/ethnic relations in New Zealand is suggested as reflecting an ethnic resurgence which corresponds 'with similar signs of cultural revitalisation and ethnic based social movements around the world' (Pearson and Thorns 1983:210). As the earlier discussion on ethnic and cultural boundaries argued, the ongoing dynamics of capitalism have not led to the integration of physically and ethnically differentiated groups, but instead have had the opposite effect, fostering 'long dormant primordial loyalties' and tensions (McRoberts 1979:293, cited in Pearson and Thorns 1983:211). In New Zealand, Pearson and Thorns argue, there has been a great deal of merging between Maori and pakeha, but on all fronts it is less than total and invariably reflects the superordination-subordination dynamics that characterise colonised populations (see also Barber 1989 on the use of race relations policy as an administrative strategy for the appropriation of Maori resources). In consequence, they argue, a model of ethnic relations is required that 'acknowledges important but limited forms of cultural and social diffusion but at the same time stresses the centrality of factors that inhibit, indeed appear to debar, the dissolution of ethnic and racial boundaries'. This model, they conclude, is Hechter's notion of internal colonialism.

2.1.5 Internal Colonialism:

Hechter's internal colonialism model grew out of Robert Blauner's (1972) efforts to examine the relative situations of American Blacks within the United States, by comparing them with initially-majority indigenous groups which are colonised by minorities from geographically distant locations, and subsequently become controlled through external relations between those countries (Pearson and Thorns 1983:213). The latter he termed classical colonialism; the former, internal colonialism. In New Zealand, Pearson and Thorns argue, a transition from classical to internal colonialism can be readily identified.

Drawing, in addition, on the *development of underdevelopment* and *dependency* schools of thought (particularly Frank 1969 and Wallerstein 1974), Michel Hechter (1975, 1978) similarly examined the experience of Scotland and Wales *vis-à-vis* the

historical expansion of the English State. In his study, Hechter applied the linked concepts of regional core (colonial centre) and periphery (colony) to the ethnic groups involved, a premise which, due to the multi-ethnic composition of many other such regions, has been vigorously disputed (McRoberts 1979:296; Pearson and Thorns 1983:215). Shortcomings aside, however, the model's strength lies in its argument that the political, social, economic, and cultural systems of the core become superimposed upon those of the periphery and give rise to a 'cultural division of labour', wherein members of the core group are disproportionately assigned to situations of advantage, and members of the periphery to situations of disadvantage. Because of the subsequent institutionalisation of the core group's systems, along with appropriation of surplus value inherent in the capitalist system, the core group gains at the expense of the periphery. Unless significant changes occur in both the structural conditions and the ideology that sustains them, the inequalities that were established via the initial processes of colonisation become permanently entrenched, and may even exacerbate.

From Hechter's perspective these processes have the further potential to increase inter-ethnic tensions. He accepts that over time, some degree of diffusion and acculturation between the two (or various) groups will undoubtedly occur. However, he argues that contrary to the potential outcomes implied by diffusionist theory, where the heightening of interactions between groups is argued to bring about a lessening of inter-group inequalities and a reduction in inter-ethnic tensions, the internal colonialism model suggests that the peripheral group will eventually assert itself in reaction to the dominance of the core (1975:10). Accepting that some individuals of the peripheral group will achieve high status occupational roles, Hechter posits three scenarios, each of which contain incrementally greater reactive potential (1975:41). Under the first scenario, he proposes that 'high occupational status' individuals may come to identify with the core group, and may as a result undergo a subjective re-identification of their ethnic identity. This scenario, he argues, would serve to remove potentially divisive leadership from the peripheral group and to thereby ensure the stabilisation of the cultural division of labour. Under the second scenario, Hechter argues that such individuals may attempt to maximise their individual power by acting as brokers between the two groups. As ethnic leaders these individuals may seek to narrow the material differences between the two groups by appealing to essentially universalistic values. Hechter argues that the consequences of this scenario are less clear, but the probability is that should any change occur it will be gradual. The third scenario Hechter sees as the

assertion by such individuals of the equal and even superior value of the peripheral culture. Under this scenario the separateness of the periphery as a nation may be claimed, and independence sought. By and large Hechter sees this last scenario arising as a result of the slowness of economic integration in the face of larger expectations, and associated with the development of more militant action. Although all three scenarios may exist simultaneously, the degree to which one or other might become prominent Hechter relates to the overall probability of achieving economic integration, this being largely determined by factors such as the relative demographic size of the groups, the indispensability of the periphery's role in the national economy, and the kinds of policies adopted by central government.

When laid out in this manner Hechter's model can be seen to contain two key, though apparently contradictory, strands. The first strand focuses on the structural aspects of the stratification process and argues that the cultural division of labour is essentially self-reproducing; the second focuses on the social action (behavioural/agency) response and argues that the cultural division of labour contains varying degrees of revolutionary (or mobilisation) potential, which involves demographic, economic, and political determinants.[7]

Applying Hechter's arguments in the New Zealand context, Pearson (1988) adds to his study the role of ethnic group leadership as proposed by Ross (1980). Pearson explains that within Ross's model there is an expectation that different forms of collective identity will emerge at different stages of societal development and intergroup relations (p. 175). The Maori population, Pearson's study finds, can be seen to be moving through such a series of transitions, from communal groupings, through the experience of minority subordination, to an emergent or realised ethnic group status. Importantly, with the onset of renewed attempts to seek greater degrees of self determination by Maori, Pearson also implies a potentially reactive ethnic awakening within the majority pakeha population (pp. 187-88). This is certainly reflected on contemporary talk-back radio shows, and in an increasing number of newspaper articles.

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[7] It is on this second point that I conclude the approach constitutes a fourth variant of the stratification literature.

2.2 SUMMARY

Ideas about race, ethnicity and culture, then, are intrinsically tied to ideas about economic production and power. In the case of New Zealand, they are also tied to a colonial history and the capitalist nature of society. All of these processes are reflected in Hechter's theory of internal colonialism, which holds that, contrary to 'melting pot' assumptions of eventual integration and/or assimilation, the longer term prognosis for colonised populations is the entrenchment of initially established differentials and/or the potential for an increase in inter-ethnic tensions. Pearson's (1988) combined use of the arguments of Hechter (1975) and Ross (1980) has substantiated both situations for New Zealand.

Pearson's (1988) approach, is, however, expressly concerned with theorising and illustrating Maori ethnic revival, and as a result emphasises the role of human agency. In contrast, this thesis has a structural focus. It investigates the extent of economic integration implied in Hechter's model through conventional stratification indices, it extends Hechter's premises beyond the potential role of demographic size to the more comprehensive realm of demographic reproduction (thus introducing a population composition dimension), and it considers the interdependence of each component in an overall political-economic context. First, however, the thesis turns to an elaboration of the demographic aspects of these arguments, which were seldom acknowledged in any of the foregoing literature.

3

DEMOGRAPHIC REPRODUCTION: CONCEPTS AND THEORIES

> *All human societies are necessarily involved in three interrelated productions which cannot be subsumed one to the other: (I) the production of the means of production; (II) the production of the means of subsistence; and (III) the production of labour power on a daily and a generational basis* (Seccombe 1983:29).

3.0 INTRODUCTION

If populations must both produce and reproduce if they are to survive, studies of ethnic stratification are seriously lacking in their appreciation of interactions between the two. By contrast, this chapter elaborates the argument that demographic reproduction may play a role in the process of ethnic stratification, and needs to be examined, along with factors related to economic production *per se*, under the auspices of total social production.

The chapter begins by outlining the general propositions associated with the latter, a largely theoretical argument that sees economic and demographic factors as fully interdependent. However, because much of the small body of literature which arguably represents this genre is not framed in the explicit terms of total social production, the chapter then turns to alternative material that embodies similar arguments. Chief amongst this material—in relation to the central concerns of this thesis—is the so-termed 'Easterlin hypothesis' (1987a), which emphasises the potential for relative cohort size to be both a cause and a consequence of socio-economic inequality. These arguments, in turn, demand a rudimentary understanding of demographic change, both as a dependent and independent variable. The chapter addresses these issues, and concludes by combining the two sets of premises—those pertaining to total social production in general, and those pertaining to the Easterlin hypothesis in particular—into a single set of propositions pertaining specifically to ethnic stratification.

3.1 TOTAL SOCIAL PRODUCTION

Although there is a dearth of literature framed in the explicit terms of total social production, the basic premises of the concept have been around for a long time and are essentially non-controversial: neither production nor reproduction can take place in the absence of the other. Certainly Malthus (1798), who saw population growth as outstripping economic growth, and later, Boserup (1976), who saw the same factor as stimulating economic growth, had much to say about the fundamental interdependence of the two, as has much of the population and development literature since (see especially Hajnal 1959, 1982; Tilly 1978; Wrigley and Schofield 1981; McNicoll 1980, 1989; Coale and Watkins 1986; Handwerker 1986; Wrigley 1988; Greenhalgh 1983, 1989, 1990, 1995; Dyson 1991; Johansson 1991; Watkins 1991; Folbre 1994; McDonald 1996).

Simultaneously, a debate has developed over whether or not one or other factor should be—or can be—given analytical primacy. As noted in Chapter 1, most Marxist, Weberian, classical and neo-classical economists see demographic reproduction as a factor which, although regularly acknowledged as having generated the labour force and consumer populations, is secondary or external to the workings of the economy itself. By and large this position reflects the fact that economic analysts are principally concerned with population in terms of labour force participation and unemployment rates (stocks and flows), a situation that arises out of the premise that it is the cyclical expansion and contraction of capital that dictates the cyclical *demand* for labour and its various skills, and not its demographic *supply*. In an analogous manner, analysts of ethnic stratification tend to focus on the relationship between the economic and ideological dimensions, and generally ignore the demographic.

The small body of literature that can be interpreted as pertaining explicitly to total social production, however, argues that economic production and demographic reproduction are *both* material processes, and that neither dimension can be subordinated to the other. Overall, these writers argue, the problem of economic primacy reflects a general failure to adequately conceptualise and integrate the generational replacement of labour power. That is, where, when, why and how the population of which the labour force is comprised, and not merely the relative deficit or surplus of labour at any given time, originated. Similar must be said of the genesis of the

consumer population, without which capitalist production would have rapidly ceased, and capitalism with it.

Drawing on the Marxian notion that each historic mode of production has its own special law of population, and emphasising Engels (1884) argument that the production of the means of subsistence and the reproduction of human beings are the determining factors in history, Cordell, Gregory and Piché (1987, 1994:23-24) offer a comprehensive elaboration of the argument (given here in slightly abridged form):

1 Social organisation can function only if conditions that make possible the continued production of both the means of subsistence and of human beings in sufficient quantity and quality are met. This is termed *social reproduction.*

2. The production of human beings is an integral part of social reproduction, and, although appearing to be an aggregate of isolated acts between individual couples, is nevertheless a socially determined form of production.

3. As with any type of production, the production of human beings requires labour. Thus, total labour implies both labour to produce the means of subsistence and labour to produce human beings. A key process in the production of human beings is the sexual division of labour.

4. A fundamental social necessity is that the labour force must produce both the means of subsistence and [the conditions for the production of] human beings. Thus, the production and reproduction of the labour force is one of the conditions for total social production.

5. Another of these conditions is that there must be control of production, and of the division of labour and values and norms. The crucial questions are who controls, how control is exercised, and how control is resisted.

6. Three elements underpin the reproduction of the labour force: (a) the replacement of older workers to respond to new demands and to offset deaths and emigration; (b) the maintenance of the existing labour force in good health (which involves the provision of adequate food, shelter, sleep etc.); and (c) a system of social security (material support) for non-working members (that is, the unemployed, sick, elderly, children). These renewal processes centrally involve procreation and the recruitment of humans produced elsewhere (migration).

7. Each of the above elements (replacement, maintenance and renewal) requires labour and access to the means of subsistence, and specific costs are associated with each. An important question is what group or groups absorb each set of costs.

8. The family as an institution represents the main locus of production and reproduction of the labour force, being responsible for its replacement, maintenance and renewal. Within the family, the sexual division of labour, with women performing most of the domestic work related to the production and reproduction of the labour force, is

crucial. The extent to which these costs and responsibilities are shared with other social institutions depends on the specific historic conditions.

9. The conditions for the production of the labour force are maintained and reproduced both by relationships of power, and through ideology and values. Dominant groups control the institutions that create and reproduce both the legitimating ideology and its praxis.

10. Competition and conflict between dominant groups for the control of the labour force, and between dominant and dominated groups, are historical facts. These tensions are the source of change in the production and reproduction of the labour force, and for the production and reproduction of the associated demographic regime, which is historically and contextually specific.

Although not explicitly elaborated in the foregoing work, very important to these arguments and to their application in this thesis is the concept of *lag time*, first as it pertains to the period between births and their eventual arrival at the labour market, and second as it pertains to the childbearing patterns of subsequent generations. As implied above, from most economic perspectives—at least under a capitalist regime—the demand for labour is determined by the cyclical phase of capital extant at that moment, that is, whether it is in an expansionary or contractory phase, and has little or nothing to do with demographic supply. Similarly seen as having little to do with past demographic patterns, the demographic literature sees the demand for children as generally reflecting extant socio-economic and cultural circumstances. Since the mid-1970s, for example, this demand has been seen as reflecting a neo-classical type of choice between having children and achieving material aspirations (albeit the latter possibly reflecting values developed in the parental home). Out of this framework has developed a general understanding that sees the delayed childbearing and low fertility of what has been termed the 'second demographic transition' (Lesthaeghe and van de Kaa 1986; van de Kaa 1987, 1988; Lesthaeghe 1991, for New Zealand see Jackson and Pool 1994) as both cause and effect of high levels of personal material well-being, and early childbearing and high individual fertility as reflecting the opposite.

However, taking a more interdependent and intergenerational perspective, American economist Richard Easterlin (1980, 1987a, 1987b and *passim*) proposes a rather different argument. When times are good, he argues (perhaps when capital is in a specific expansionary phase, such as occurred between the late 1940s and 1950s), there

is an increase in the Crude Birth Rate (live births per 1,000 population).[1] After the relevant lag time, and given minimal effects of death and migration, this increase results in a concomitant increase in competition between these individuals as they reach the labour market. Subsequently, this competition, which pertains to resources in general, disadvantages the cohort economically and results in both a delay in family formation and a decrease in the number of children it gives birth to. Conversely, when these resulting births eventually reach the labour market themselves—assuming no major changes in death or migration rates—they experience relatively less competition, enjoy relatively advantaged material well-being, and as a result have earlier and more births. Thus, a self-generating sequence is established in which relatively disadvantaged large cohorts derive relatively advantaged small cohorts, and vice versa. In contrast to demographic convention, which holds that the greater the proportion of young adults in a total population, the higher the Crude Birth Rate, Easterlin argues therefore that 'the population of young adults and the birth rate [move] inversely—when the proportion of young adults rises, the birth rate falls' (Easterlin 1987a:55). So too with ease of labour force entry, and economic fortunes in general.[2]

Resonating with the above arguments of total social production, Easterlin proposes that each cohort's material well-being and its demographic behaviour is thus a function of *both* extant and prior economic and demographic factors, and that these factors in turn contribute the future material well-being and demographic strategies of each offspring cohort. These cyclical premises he then uses to explain the rise in births associated with the post war baby boom, a supposed 'aberration' in a long term downward trend that has not been satisfactorily explained in conventional demographic transition terms. That is to say, Easterlin argues that baby boom parents belonged to small cohorts, and as a result of less competition were able to marry early (cohabitation was far less frequent), have children early and have more of them. Similarly, he applies the argument to the subsequent economic and demographic ('baby bust') experiences of American baby boomers, who, he argues, have had to alter their demographic behaviour in order to maintain a favourable standard of living—perhaps reflecting perceptions of that of their parents'—in the face of deteriorating labour market conditions (see also

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[1] A number of conceptual and methodological shortcomings are evident in Easterlin's model, not least those aspects based on the Crude Birth Rate. This and other issues are taken up below and in the following chapter.

[2] Aspects of Easterlin's arguments have also since been applied to issues such as crime, suicide, marriage and divorce, voting, educational outcomes, and retirement funding.

Easterlin 1968; Easterlin, Wachter and Wachter 1978; Freeman 1979; Smith and Welch 1981; Schultz 1981; Easterlin, Macdonald and Macunovich 1990). The application of these ideas to minority group issues, and thus, implicitly, to the issue of ethnic stratification, Easterlin alludes to only in passing (Easterlin 1987a:161). However, before this possibility can be explored further, it is necessary to more fully understand the dynamics of demographic change.

3.2 DEMOGRAPHIC TRANSITION: A BRIEF DESCRIPTION

Demographic transition describes the phenomenon whereby moderately high mortality (death) and fertility (birth) rates, which together result in populations of static/slowly changing size and age structure, decline to low levels, again achieving a stable, and eventually—at least theoretically—a stationary (zero population growth, ZPG), state.[3]

In the classic model of demographic transition, which describes the experience of several Western European populations, the pre-transitional age structure is triangular-shaped, with the largest proportions of the population located in the younger age groups, and a correspondingly low median age. Mortality levels then begin to decline, resulting for a time in an even younger age structure. That is to say, because declining mortality has its greatest effect at the youngest ages, more infants and children survive, eventually becoming reproducers themselves; and because fertility has not yet fallen or is only beginning to fall, the proportion of the total population in the younger age groups increases. The population growth that is derived from the resulting youthful age structure is known as the 'momentum effect' (Keyfitz 1971:71-80), and is greater than that which would be expected from that population's net reproduction rate. After a period, and for a variety of reasons, uppermost amongst which are social and economic change, fertility levels also fall, and, in combination with sustained low mortality, derive a 'mature' population—a population with a high median age and a somewhat rectangular shaped age structure. Once the built-in growth from the effect of momentum

[3] For the basic premises see Notestein 1944; Davis 1945; Coale 1973; Caldwell 1976. For arguments that pre transitional rates were moderately high and then increased, rather than being initially 'very high' as first thought, see Coale and Demeny 1983; Dyson and Murphy 1985; Coale and Watkins 1986). More recent—and somewhat challenging—perceptions regarding the notion of stationarity are discussed below.

is spent and the rate of growth falls to zero, this age structure becomes—theoretically—more or less permanent, the so-called stationary population.

The transition itself, as the concept implies, is the period of instability in population size and structure between the beginning and end points of transition (Demeny 1972). Differences between populations in the timing and velocity of mortality and fertility decline thereby result, at least for a time, in populations—and sub-populations such as ethnic groups—with differing age structures. Such dynamics underlie the earlier noted differences in age structure between European and Maori, the former experiencing a classical transition between the late 1800s and the 1970s (albeit 'interrupted' between the late 1930s and 1961 by the baby boom—discussed below and in Chapter 6), and the latter experiencing a 'delayed' variant of the classical transition (e.g. Pool 1991a:5) between the 1940s and the 1970s.

Complicating this model, which has been heavily criticised (e.g. Knodel and van de Walle 1979; Coale and Demeny 1983; Dyson and Murphy 1985; Coale and Watkins 1986; Hodgson 1988; Szreter 1993; van de Kaa 1996), are three somewhat inconsistent features. First, as implied, is the baby boom, which was experienced in all developed countries, and which in New Zealand saw the non-Maori Total Fertility Rate (TFR[4]) rise from 2.1 (the theoretical replacement level) in 1936, to 4.2 in 1961, and return to replacement in 1977. These years of fertility increase (1936-1961), which followed a globally-experienced Depression and the Second World War, were associated with a decline in age at marriage and childbearing, an increase in the proportions marrying, and an increase in family size.

Second, the years 1961 to the mid-1970s, during which time fertility declined and returned to replacement level, were the vanguard of the period referred to above as the 'second demographic transition'. During this period, the fall in fertility was associated with a fall in the proportions marrying, especially at younger ages, an increase in age at childbearing, and an increase in the proportions having zero or one child(ren). These dynamics (which are still in progress), are returned to below. In the interim, it should be understood that many demographers reject the notion of a 'second' transition, and simply see the baby boom as an aberrant—and largely unexplained—phenomenon, which interrupted a longer term trend (see especially Cliquet 1991).

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[4] The TFR is a synthetic measure approximating the average number of children a woman would give birth to over her lifetime if she were to experience the age-specific fertility rates current in any given year.

Third, a small groundswell of publications have recently observed that the fertility of a number of developed countries is continuing to fall even though well below replacement, in which case such populations could eventually decline in size, a scenario that would have significant—and unprecedented—implications for population age structure (Demeny 1995), and with it, the social, economic and political organisation of those societies (McDonald 1996).[5] The capacity to sustain a population's dependent members (its youth, elderly, unemployed etc.), for example, depends upon there being a sufficiently sized labour force and tax base. Alternatively, the situation of sub-replacement fertility may also be transitory, reflecting a previously un-theorised phase between past and future homeostasis (Coleman 1986; Lee 1987; Lesthaeghe 1980; Wilson 1996; Wilson and Airey 1997). Either way, as the arguments pertaining to total social production contend, the material well-being of a population is inherently bound to its capacity to replace itself, a task that may (either intentionally or unintentionally) also involve migration.

3.3 DEMOGRAPHIC TRANSITION: SOME EXPLANATIONS

Explanations for demographic transition are, like those pertaining to ethnic stratification, many and varied. Indeed, as van de Kaa (1996) argues, so diverse and yet so plausible are most of the explanations that it is impossible to arrive at a synthesis: instead, it is better to see each as a 'narrative' or 'sub-narrative' that contributes to the whole. However, and at the acknowledged risk of oversimplifying what is a very complex situation, it is the contention of this thesis that two underlying explanatory themes predominate: economic-ideational and cultural-ideational—although even then, as Smith (1988:x), Kertzer (1995) and others cited in the previous chapter argued, the distinction is spurious. A brief review of these explanations follows, preceded by an outline of relevant technical issues.

3.3.1 Technical Issues:

The concept of fertility refers to number of live births. In relation to demographic transition theory, fertility was originally measured via the Crude Birth Rate (CBR), which, as noted earlier, is the number of live births divided by the number of

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[5] Such concerns have long been a feature of perspectives on population in France. What is new is the recent discovery that the possibilities may eventually apply to all, or most, countries.

population. The index, which is purely concerned with population size and growth, is problematic when used comparatively, due to the fact that it does not allow for temporal changes in age structure or the timing of family formation, or for differences in these factors between populations. That is to say—and partially contradicting Easterlin's arguments outlined above—classic demographic understandings are that populations with large proportions of women at the reproductive ages will have higher CBRs than populations with low proportions.

Between the 1930s and 1950s the crude measure was joined by the more refined Net Reproduction Rate (NRR), which is a synthetic period measure of the average number of live daughters a woman would bear during her reproductive life is she were to experience the age-specific birth rates of the reference year; and, in the 1950s, by a third measure, the similarly synthetic and period-specific Total Fertility Rate (TFR), which is the average number of live births *per se* a woman would bear during her reproductive life is she were to experience the age-specific birth rates of the reference year. Both the NRR and the TFR are based on age-specific rates (ASFRs), and thus control for both temporal changes in age structure and for differences in this factor between populations. However, as with the CBR, neither can accommodate temporal changes in the *timing* of family formation, a measure which requires recourse to data for true cohorts. De Beer, Beets, Bosman and Willems (1991:140) explain:

> If, at a certain point in time, increasing numbers of women decide to stop childbearing... then the total number of births will decrease due to the loss of third and higher order births. If, at the same time, increasing numbers of young women decide to postpone the arrival of a first and/or second child to a later age, then the total number of births drops even further... Summing up these age-specific rates, gives very low TFR values.
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> After a number of years the tide might turn. The women who postponed childbearing will have grown older and may decide to [begin childbearing] at age 27, 30, or even later [and] the fertility rates at these ages [will] start rising again.. [If] at the same time, the youngest generations.. prefer to have their first and or second child at young ages again, then fertility rates at these ages will also start rising... their sum, the TFR, ends up at a high level again.

As De Beer et al. explain, all women involved here (hypothetically) had two children, their fertility did not change at all. The only thing that changed was the age at which they had those children, leading to an artifactual change in the period TFR. The issue itself, as it impacts on period fertility rates (such as those used above to describe

the baby boom), is well recognised and understood (see particularly Jones 1990; Cliquet 1991:18-20; Ni Bhrolchàin 1992; Demeny 1995:3). However, its broader implications, particularly as they pertain to comparisons between sub-populations such as ethnic groups, are generally not.

For example, the TFRs of two sub-population ethnic groups may indicate convergence, when in fact it is a convergence in the index only, not in the behaviour or the underlying characteristics understood to be associated with family formation. Since the late 1980s, for example, the TFRs of the Maori and European populations have more or less converged, at just on 2.2 births per women. However, as Jackson, Pool and Cheung (1994) found, approximately seven years separate the peak ASFRs of the Maori and European cohorts which began their reproductive careers in the early 1980s, compared to only one year for their counterparts in the 1960s. That is to say, the bulk of childbearing for Maori of these cohorts occurred around age 21; for European it occurred around age 28. Two decades earlier, the corresponding ages were 22 and 23 years. In contrast to the idea that Maori and European family formation strategies are converging (Pool 1991a:4, 213), therefore, it appears that it is only the synthetic levels that have converged. Indeed, the cohort disparities suggest quite different sets of explanatory circumstances, to which the chapter shortly turns.

At least part of this problem reflects a significant and essentially unresolved analytical issue within the discipline of demography, that is, how to relate the descriptive aspects of population change to the interpretation and explanation of reproductive behaviour.[6] According to Francisco (1996), the discipline has had an historical preoccupation with issues of population size and growth, and as a result it has been concerned with fertility as an *output*, as opposed to an *outcome,* measure. The former refers to the quantity or number of live births per women; the latter, to the cluster of practices, attitudes and knowledge of both sexes that might explain the whys and wherefores of fertility output (Francisco 1996:79-80). As fertility transition has progressed it has become increasingly important to understand how and why fertility change occurs. This understanding requires more of a focus on fertility as an outcome of many complex relationships, not least those between conjugal partners. Nevertheless, as

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[6] In the case of New Zealand, the problem has also reflected a frustrating lack of appropriate micro-level data. However, the issue has recently been resolved with a first-ever comprehensive survey, publications from which are just beginning to emerge (Population Studies Centre, University of Waikato, New Zealand).

Francisco contends, it is the output measures that are still widely used to explain behavioural change. One significant analytical implication, he argues, is that the discipline of demography may need to re-evaluate its somewhat singular focus on females, and to more comprehensively incorporate the characteristics and circumstances of males, that is, to develop a 'two sex' demography. This is nowhere more evident than in the case of ethnic fertility change, where conjugal partners may belong to different ethnic groups, and where rates constructed on the basis of data pertaining to females only may significantly over- or under-estimate both output and behavioural change (Jackson 1996).

As the issues pertain to this thesis, however, the major problem is with Easterlin's use of the CBR (and as an adjunct, the TFR) as the basis of his model, and the failure to distinguish between period and cohort fertility, leading to serious conceptual, theoretical and methodological conflations of some of the model's key components. These issues are taken up in Chapter 4, but in the interim it should be noted that it is possible for the CBR and the TFR to fall, but for cohort size to remain almost unchanged, due to an increase in the number of women giving birth. Similarly, where Easterlin proposes a standard gap of 20 years between each large and small cohort, a generational shift in the timing of family formation would by definition derive two different period-gaps—a 'late' childbearing gap of, say, twenty-eight years; and a shorter gap of, say, twenty-three to twenty-five years, when the socio-economic situation is reversed. Indeed, by most western standards, a gap of 20 years (implying an average age at childbearing of 20 years) would be far too short. These factors are of vital importance both to Easterlin's hypothesis and to its application here, because whilst (theoretically) they determine the relative size and the number and proportion of large or small cohorts in a population at any given time (Easterlin 1987a:140), they cannot be ascertained from either the CBR or the TFR.[7]

3.3.2 'Economic-Ideational' Explanations:

At the highest level of abstraction are two macro-economic explanations for demographic transition. The first, which stems from Marx and Engels—and thus, it is important to note, *predates* attempts to explain the transition proper—has seen very little development in demography (cf. Levine 1977; Caldwell 1982; Seccombe 1983;

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[7] Explained in Chapter 4, an indication of shifts in the timing of family formation can be ascertained from the age-specific components of the TFR, but this was not the approach employed by Easterlin.

Cordell, Gregory and Piché 1987). This is the theoretical argument used by Seccombe (1983) and Cordell et al. (1987) that each mode of production contains its own law of population. That is, as each historical stage, with its different systems of production and consumption is encountered, so too the family changes. Neither Marx nor Engels, however, fully elaborated the demographic aspects of their arguments. For Marx, a brief comment in Chapter 25 of *Capital* suggests that the outcome of increasing proletarianisation and its concomitant povertisation would establish a self-generating mechanism whereby proletarian births would eventually become proletarians themselves. However, the overall tendency, according to Engels (1884), would be for the mode of production to change in a manner that would cause the family to become smaller, and thus (implicitly) for demographic transition to take place.[8]

The second macro-economic explanation is based on the classical understandings of demographic transition noted above, that fertility decline is a consequence of an *a priori* decline in infant mortality.[9] These understandings have led to the highly descriptive (and similarly unidirectional) contention that a country's infant mortality rate (IMR) and its fertility levels are inversely correlated with its Gross National Product (GNP): the higher the GNP—or the more developed a country's health and education infrastructure, the lower the IMR and fertility.[10] (*Ergo*, as argued in the introduction, the lower the IMR and fertility, the older the age structure, the higher the proportion of those who own wealth or the means of production. Seemingly paradoxical, therefore, are the arguments contained in the Easterlin hypothesis, that the more advantaged—or wealthier—the cohort, the higher its birthrate and thus, implicitly, the greater its contribution to a youthful age structure. However, as implied above, the two arguments are not incompatible. Rather, as Easterlin posits, the situation of each cohort is, like the age structure to which it contributes, also transitory. The determining factor, in relation to the contribution that each cohort will make to the age structure and overall wealth of the population to which it belongs, depends in large part upon the *number* and

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[8]That said, it is important to acknowledge the extent to which demographic factors were given an important role by one writer. Implicitly debating with Marx, Alexander Chayanov (Thorner, Kerblay and Smith 1966:68, 245) demonstrated that the size and composition of the late 19th Century Russian peasant family at different stages of its existence, and not social factors *per se*, caused differentiation of peasant farms into capitalist or proletarian farms.

[9] It is important to note here Omran's (1971, 1982) model of epidemiological transition, which elaborates three different types of mortality transition: classic, delayed, and accelerated. As also noted above, for similar reasons, fertility decline can precede a substantial decline in mortality.

[10] The argument is the same whether GNP or GDP (Gross Domestic Product) is the indicator employed.

proportion of large or small cohorts in the population at any one time, which in turn depends upon the length of the intergenerational period.)

Moving down the abstraction ladder are the various micro-level explanations given to the underlying—behavioural—dynamics of fertility change. Two main schools of thought predominate: changes in the economic costs and benefits of children, as elaborated in the wealth flows theory of Caldwell (1982); and shifts in the value systems of parents, as elaborated in the second demographic transition arguments of Lesthaeghe and van de Kaa (1986); van de Kaa (1987, 1988), and Lesthaeghe (1991-2). Although both sets of explanations can be perceived as primarily ideational in nature, they in fact centre on the notion of rational choice, and emphasise *utility* (new-household or micro-economic) theories, which endeavour to explain why people make certain choices between scarce resources and options.[11] The first set, which is generally associated with the onset of fertility decline, sees parents as having to choose between having many children for the goods and services they provide (whether or not they actually have them with this intention, e.g. Dyson 1991:81), and having to support those children in a changed environment that on the one hand keeps more children alive, and on the other, requires them to be educated and restricts their early access to jobs. Increased sibling competition for scarce resources is closely associated with these 'quantity of children' arguments, as are supply, demand, and attitudinal arguments pertaining to contraception (the latter explicated in the 'intermediate-' and 'proximate-determinants' frameworks of Davis and Blake, 1956, and Bongaarts 1978). The second set, which is associated with a shift to later and lower childbearing, sees young adults as choosing between having children, if at all, and achieving other non-familial goals and aspirations. Increasing female labour force participation, the associated arguments of role incompatibility and opportunity costs, the widespread availability and usage of efficient contraception, and perceptions about the future costs of educating children (quality of children) are particularly implicated.

Although essentially framed in economic-ideational terms, both sets of arguments are also routinely posited in highly evolutionary terms. Failure to contracept, or, at the level of population, to complete the transition, tends simultaneously to be ascribed to deeply rooted cultural values (e.g. Caldwell 1982; Lesthaeghe 1983, 1991-2:2-9; van de Kaa 1987:5-11; cf. Robinson 1992:457, cited in Kertzer 1995:3). Indeed,

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[11] As such they are strongly reflective of Becker's (1960, 1981) 'new household economics', which theorised the demand for children (as 'consumer goods') within an economic utility framework.

most micro-economic theories are in fact a linear combination of *normative* (cultural) and *utility* (rational actor) arguments. They link, but make a general distinction between, on the one hand, pre-transition fertility (and mortality) as governed by culturally normative (but geographically diverse) patterns of behaviour; and, on the other, late- and post-transition fertility as being largely motivated by individual (but paradoxically globally homogeneous) rational choice.

These normative-utility arguments are not without substantial critique (e.g. Day 1985; Jones 1990; Hammel 1990; Szreter 1993; Hayes 1994; Kertzer 1995), and indeed are increasingly seen as untenable (Wilson and Airey 1997:18). Certainly the fertility mediating role of institutional, administrative, and political dimensions cannot be denied (McNicoll 1980, 1989; Greenhalgh 1989, 1990; Watkins 1990, 1991; Hoem 1993; Cleland 1994; Chesnais 1996), as, nor can, the 'path dependency' arguments of McNicoll (1993), which hold that current choices are largely predetermined by previous choices and the circumstances in which they were made. Moreover, where these dimensions concern policy, Johansson (1990, 1991) argues that not only direct policy innovations, but also the indirect effects of what she terms 'net' policy, that is, the unintended outcomes of not one, but a whole constellation of policies, can have a major influence on demographic behaviour. Furthermore, this influence may be quite different in different socio-economic contexts. Oppenheimer (1984) argues that even ostensibly similar demographic outcomes may have quite different determinants, interpretations, and ongoing implications for different populations. Reflecting aspects of Easterlin's thesis, for example, she argues that declining fertility for some groups (e.g. American Blacks) may be a function of falling labour force participation and incomes—for *males* as much as for females, the former of whom are usually missing from studies of changing fertility—as much as it may reflect rising participation and incomes for others (e.g. American Whites). Similarly, higher or lower participation rates *per se* do not necessarily mean that a group is better or worse off (Sullivan 1978:166). For some, especially at the younger ages, a low rate may be a good sign (perhaps reflecting increasing participation in tertiary education), whilst for others it may reflect discouragement and withdrawal from the labour force. Alternatively, a high labour force participation rate may be a negative indicator of, for example, the necessity to put work ahead of study.

Most importantly, the experiences of men and women cannot necessarily be interpreted within the same framework. Indeed, from the latter perspectives, the

essentially neo-classical and male-oriented assumptions about relationships between (usually female) labour force participation, earnings, and family formation strategies, may be particularly spurious (see also Cordell et al. 1987:16). Certainly they fail to explain why fertility in most developed countries rose to produce the baby boom at the very time that female labour force participation and earnings were also increasing. They also fail to explain why both fertility *and* labour force participation have historically been higher for some sub-population groups than for others, for example, for Black compared with White Americans (Presser 1971:329-330).

Class-related arguments of fertility change have also been broadly substantiated (see for example Schneider and Schneider 1984; Handwerker et al. 1986; Kertzer and Hogan 1989; Greenhalgh 1989). In these studies, the temporally-differing (but 'classical') fertility transitions of different social classes is related to differing relationships with, and abilities to maximise, changing macro-level opportunity structures. However, even in these studies, there is an implicit acceptance of the inevitability of demographic transition, and minimal acknowledgment of the extent to which compositional differences within the observed demographic outcomes (e.g. differences in the timing of family formation, age structure) could potentially play a role in the class structure.

3.3.3 'Cultural-Ideational' Explanations:

Explicitly ideational arguments—of which there are considerably fewer—downplay the economic dimension and emphasise the diffusion of ideas (Cleland and Wilson 1987; Cleland 1994; Caldwell 1995). As these and other studies, such as those pertaining to pre-industrial France (e.g. Knodel and van de Walle 1979) and the Indian state of Kerala (Mahadevan and Sumangala 1987) clearly demonstrate, demographic transition can be achieved in the absence of significant economic improvements, at either macro- or micro-level. Similarly, transition can equally well be resisted, when ideological—especially religious and political—norms and value systems conflict with those required to bring about transition. Cleland (1994), particularly, identifies the nature of some of these conflicts, and the many different pathways to transition that can result (see also McIntosh and Finkle 1985, and Gulhati and Bates 1994 on the political aspects). Likewise, the 'proximate determinant' frameworks of Davis and Blake (1956:211-235) and Bongaarts (1978, 1982) clearly identify the role of attitudes and the cultural context in facilitating or obstructing fertility change.

That said, as has already been argued, the distinction between what is ideational and what is economic—or cultural or social or political—is itself problematic. Watkins (1991), for example, in her seminal study *Markets, States, Nations and Bedrooms...* argued that whilst much of the western European fertility transition did indeed come about as social and communication networks expanded across linguistic and cultural borders, the ideas that were communicated were very much related to the perception of a changing economic environment, and not least to the desirability of accessing certain consumer goods. Similarly, in arguing recently that the now-falling fertility of most of the developing countries has essentially been 'talked down' through schooling and the media, Caldwell (1995:6) centrally acknowledged the transition as a technology-dependent process, the result of economic development (and concomitant ideas about the ultimate economic value of fertility transition) elsewhere.

On this point Szreter (1993) goes further, arguing that demographic transition is not so much an ideational *or* economic *or* social phenomenon as it is an 'idea' that has been (or is being) achieved through a political-economic agenda (see also Hodgson 1988; and van de Kaa 1996). Moreover, he argues, it is an idea that has become empirically irrefutable. In its original formulation, first implied by Thompson in 1929, and more fully elaborated in the early post-war years by Notestein (1944), Kirk (1944) and Davis (1945), demographic transition (inclusive of both its mortality and fertility components) was the dependent variable of underlying socio-economic change. In its reformulation between 1945 and 1950, fertility change became re-oriented as an independent variable of economic development, and thereby its own rationale for the emphasis on family-planning programs that followed. Accordingly, as both dependent and independent variable, the 'idea' of demographic transition has become a tool for measuring its own progress.

3.3.4 Ethnic Fertility Differentials

Most theoretical approaches to the study of ethnic fertility differentials derive from the United States, and are premised on either racial, ethnic or religious differences in family size and/or the age at which childbearing is undertaken. Two perspectives, neither of which has seen much development since their emergence in the 1970s, are prominent: *the social characteristics* or *assimilationist* hypothesis, and the *minority group status* hypothesis. The former holds that fertility differentials reflect socio-economic differentials, and will disappear once the underlying socio-economic

differences disappear. The latter holds that even when groups are similar socially and economically, minority group membership continues to exert an effect on fertility (Goldscheider and Uhlenberg 1969:361-362; Rindfuss and Sweet 1977:113; Frisbie and Bean 1978:1-10; cf. Day 1985, who also considers minority group membership in numerical terms). This is not to say that minority group membership causes fertility to be necessarily higher or lower than average fertility. Rather, it is an argument that sees 'other aspects of minority life besides those associated with socio-economic status contribut[ing] to minority fertility patterns' (Bean and Marcum 1978:194).

The first perspective essentially mirrors the dual market arguments recorded in the previous chapter, that is, that underlying differences in labour force participation and earnings leading to differential fertility and family formation strategies reflect underlying socio-economic differences, especially education (but also, it must be noted, prior fertility and family formation). In both cases, ethnicity (or more generally, 'race') is seen as a proxy for socio-economic status, and there is an assumption of an eventual economic and demographic 'melting pot'. Although not explicitly discussed in these terms, this is the framework within which New Zealand's ethnic fertility differentials have generally been located (e.g. Pool 1991a). The recent near-convergence in total fertility rates for Maori and non-Maori thus implies convergence in socio-economic status.

Conversely, the self-generating fertility effects of the second perspective (the minority group status hypothesis) mirror the earlier discussion on the maintenance of ethnicity, but in relation to fertility are argued to arise from other aspects of minority life, such as the proposed insecurities associated with incomplete acculturation or assimilation—that is, assimilation on some dimensions, such as education or occupation, but not others, such as intermarriage (Goldscheider and Uhlenberg 1969:370). According to Gordon (1964:76), for example, there are seven such dimensions: cultural, structural (meaning primary group level entry into cliques, clubs, institutions etc.), marital, identificational (meaning a shared sense of community or nationalism), attitude-receptional (meaning that there is an absence of prejudice), behaviour-receptional (meaning an absence of discrimination), and civic (meaning that demands are not asserted through conflicts of power). For those minority couples who are highly assimilated, the argument holds that there will be a desire to consolidate their socio-economic position by having smaller families. Conversely, for those who are 'insufficiently assimilated', the outcome may be either smaller or larger families. From

this perspective, the high levels of intermarriage in New Zealand are suggestive of high levels of assimilation on several other counts, and may therefore also be implicated in the near-convergence in Maori and European fertility rates.

The minority group status hypothesis thus holds that the fertility of minority groups will depend both upon the degree *and type* of assimilation (thus involving intra-ethnic variation as much as inter-ethnic), and differs from the social characteristics hypothesis in that it (a) sees some of these factors as extra-economic (e.g. identificational), and (b) proposes that these latter factors will mitigate against assimilation occurring on all counts. In terms of Maori and European fertility, the distinction may assist in explaining why total fertility rates, but not the timing of fertility, have converged. That said, Frisbie and Bean (1978:3-6) argue that, with the possible exception of marital assimilation, all of Gordon's dimensions appear to be derivatives of either cultural or structural assimilation. Moreover, they argue that the distinction between the two hypotheses is somewhat spurious. Indeed, their contention that ambiguities in the underlying premises reflect conceptual and methodological underdevelopment remains as pertinent today as when written in the 1970s. For example, and mirroring the normative-utility argument outlined above, Frisbie and Bean note that in situations where ethnic fertility differentials are explained by reference to extra-economic factors such as values, norms and ideologies, their interpretation tends to be framed in terms of culture. In these cases the resulting interpretation concerns what is unique about the ethnic group. By contrast, where fertility differentials are explained with reference to social and economic characteristics, the cause is seen as structural (or compositional). The former, these writers suggest, suffers from an uncritical use of the notion of culture; the latter, from a failure to distinguish between simple composition effects and inequalities in power and position in the stratification system (see also Goldschieder and Uhlenberg 1969; Goldschieder 1978:157-159). The claim is strongly reflective of Sullivan (1977:165), who argued that just as demographic forces have received minimal attention in the stratification literature, so too has ethnic stratification been a muted theme in the demographic literature. As implied, the deficit continues to this day.

Indeed, the correspondence between these arguments and many of those outlined in relation to ethnic stratification is striking. In particular are the similarities between the self-generating economic effects of ethnic group membership (as proposed in Hechter's internal colonialism thesis), and the self generating demographic effects of minority

group status, versus the idea of either economic and/or demographic melting pots (assimilation). Taking cognisance of both sets of arguments, this thesis proposes therefore that an increasing belief in the 'idea' of an inevitable demographic transition—as articulated by Szreter—has led to a concomitant preoccupation with the notions of assimilation, acculturation and integration associated with the social characteristics hypothesis, and that together these have deflected investigation away from alternatives. One such alternative may be to examine ethnic fertility change—and demographic change—under the premises of total social production.

3.4 TOTAL SOCIAL PRODUCTION AND ETHNIC FERTILITY

In order to apply the premises of total social production to the situation of ethnic fertility differentials, it is useful to first summarise the above discussion, and then to distinguish fertility, as a dependent variable, from fertility—in terms of demographic reproduction—as an independent variable.

Despite some comments that may have suggested otherwise, there can be no dispute about whether or not demographic transition is occurring, or, in many cases, has occurred. Indeed, there is increasing evidence of 'a world wide convergence on very small families' (Alam and Leete 1993:83). However, it appears clear that, irrespective of the analytical approach taken, essentially opposite arguments are being used to explain the phenomenon, especially its component of fertility decline (see van de Kaa 1996 for an excellent exposition of the complexity of the situation). For example, falling birth rates are argued to reflect an increase in material well-being and aspirations for some individuals and couples, but a decrease in these factors for others. Alternatively, they may reflect good material conditions at some historical junctures, and bad conditions at others, or simply changing conditions. They may similarly reflect positive or negative interpretations of underlying labour force participation, for both females and males, and these interpretations may also differ over time, especially as they relate to age. From an 'ideational' perspective, falling birth rates may reflect social or cultural change as much as political benevolence, or coercion, or the indirect or net effects of one or a whole range of policies that had quite different objectives. Technically, falling birth rates may equally well reflect falling parity and/or rises in the age at childbearing. As Wilson and Airey (1997:2) argue, understandings of demographic transition *per se* may have been distorted by an increasing methodological compartmentalisation of its elements.

In reality, demographic—and particularly fertility—transition reflects varying combinations of all of these factors, and the search for a unifying meta-theory, especially a uni-directional one, may have been a futile exercise. Indeed, the preoccupation of demography with tracking the transition, and increasingly with elaborating its various pathways, may have deflected interest away from a more fruitful engagement with its compositional and post-transitional implications. That is to say, whilst the effects of changing and/or falling fertility on issues such as female labour force participation, gender equity, fluctuating school rolls and population ageing have been increasingly examined, the notion of employing demographic reproduction as an independent variable of ethnic inequality (in the style of Easterlin) has seldom been utilised. Only recently, for example, have arguments surfaced that question the utility of redirecting resources from the young to sustain the welfare costs of the elderly, as is currently the case in several low fertility countries (Chesnais 1996; Esping Anderson 1996; McDonald 1996). Essentially, such policies are premised on the neo-classical argument that the cost of having and caring for children is a private issue (cf. Folbre 1994). However, as explained above, population ageing is a function of falling birth rates, that is, a reduction in the size of each new cohort at the younger ages. These lost births in turn represent a loss to the future labour force that will ultimately provide the pensions (whether these be publicly or privately funded) to the numerically and proportionately enlarged elderly population. The current policy of reducing fiscal support to the young, especially young families, in a period of high unemployment, including making it more difficult for young mothers to combine work and childbearing, can only exacerbate this situation. That is to say, since one male income is now seldom considered sufficient to support a family, and moreover, since women are now educated for the purposes of formal employment and may, as a result of other policies, have incurred debts in the pursuit of qualifications etc., the current policies are likely to cause women to further restrict their fertility. In essence this could bring about a near inversion of the classic population pyramid, with enormous proportions of elderly at the top, and very few births at the bottom. The conclusion, McDonald (1996:15) argues, is that 'policies need to give explicit recognition to the fact that children are valuable to the whole society, not just to their parents'.

As these arguments pertain to ethnic groups and the concerns of this thesis, there is a particular need to recognise that first, even convergence in fertility levels between such groups does not necessarily mean convergence in the underlying factors. Certainly the late 1980s achievement of similar TFRs for Maori and non-Maori New Zealanders

was not associated with a convergence in the timing of family formation. In turn, this situation means that while policy-makers may begin to grapple with the problems of an ageing *total* population, within that population may be another (or others) that require(s) quite different types of policies.

Second, and combining now the arguments relating to ethnic fertility differentials and to ethnic stratification under the auspices of total social production, there is a need to recognise that this combined demographic-economic diversity may in fact never result in true convergence, but may instead develop its own self-generating dynamics. That is to say, if, as the Easterlin hypothesis holds, the combined economic and demographic regimes of the present are the result of the combined economic and demographic regimes of the past, then (a) the peaks and troughs of cohort size for each ethnic group may not be occurring in synchrony; (b) the intergenerational period of each ethnic group is unlikely to be the same; and (c) the population dynamics which are likely to be having the most influence over competition for resources will be those of the numerically dominant population. Thus, the differing age structures, family sizes and/or timing of family formation which characterise, for example, the Maori and European populations will *simultaneously* encounter the same period effects, that is, the same political-economic environment with its extant opportunity structures, its policies about who pays for such things as tertiary education or children, etc. In some instances this confluence may be advantageous, and in others disadvantageous. For example, if one ethnic group (e.g. Maori) has a large proportion of its population at the younger ages during a period in which jobs are in short supply and tertiary education or the family in general are private (and expensive) costs, that ethnic group is likely to be materially disadvantaged relative to one (e.g. European) that concurrently has an older age structure, especially if that group experienced advantageous conditions (including a relatively benevolent pro-family political-economy) when it had a young age structure itself. This relative effect will obtain because any age-specific effects will be multiplied by the relative proportions at that age. Moreover, because it is the length of the intergenerational period, as much as proportionate cohort size, that, according to Easterlin, determines the experience of each subsequent cohort, the relative number of large or small cohorts in each ethnic group will have an impact on each group's overall material well-being. Finally, if the relatively disadvantageous economic conditions of the present are in fact largely attributable to the current demographic structure of the dominant ethnic group (e.g. European), then minority ethnic groups (e.g. Maori) may be both relatively

disadvantaged by and, to return to the previous chapter's arguments of internal colonialism, *under-developed by*, the former's economic-demographic interactions.

These premises can now be briefly restated in terms of their implications for ethnic stratification under the auspices of a total social production framework.

3.5 TOTAL SOCIAL PRODUCTION AND ETHNIC STRATIFICATION

1) If there is no reproduction of the labour force or the population, there can be neither economic production nor markets, and vice versa.

2) Demographic reproduction, which has both micro- and macro-level analogues, both responds to, and influences, economic production, and vice versa.

3) The productive and reproductive dimensions of human existence are therefore fundamentally interdependent.

4) Where different ethnic groups have differing relationships with economic production, their demographic regimes are also likely to be different, and vice versa. This is because the different demographic characteristics of contemporary ethnic groups, such as the micro-level factors of family size and timing of family formation, and their macro-level analogues of age structure, cohort size and intergenerational period, encounter the political-economic environment and its opportunity structures and policies *simultaneously*. This confluence may be advantageous or disadvantageous, at either or both micro- and macro-levels, but it is unlikely to have the same effect on all ethnic groups because any differences will be multiplied by the relative proportions at each age.

5) The population dynamics which are likely to have the most influence over competition for resources, and may indeed have largely determined socio-economic conditions at any historical point, are likely to be those of the numerically dominant population, and possibly even the numerically dominant cohort(s) within that population. However, it may also require political dominance for demographic dominance to be an influential force.

6) If both propositions (4) and (5) hold true, then minority groups (here meaning those lacking in socio-economic or political power) may be both disadvantaged and under-developed as a result of the demographic-economic interactions of the dominant group.

The thesis now turns to the task of drawing these arguments together in a methodological framework.

4

METHODOLOGY AND ANALYTICAL FRAMEWORK

4.0 INTRODUCTION

This chapter draws into a methodological and analytical framework the two ostensibly disparate fields of inquiry discussed in the previous chapters: ethnic stratification and total social production, with particular emphasis on the role of demographic reproduction associated with the latter. In those chapters, the conceptual and theoretical aspects of each field were outlined, and each chapter concluded with a line of inquiry that seemed especially appropriate to the specific concerns of this thesis. In the case of ethnic stratification, this was the theory of internal colonialism (Hechter 1975, 1978), which holds that once an ethnic group is colonised, the structural and institutional framework established by the dominant population will continue to recreate the original dominant-subordinate relationships, long past the time when the ideological and economic factors that facilitated their initial establishment were cogent. In the case of total social production (Seccombe 1983; Cordell et al., 1987, 1994:23-24), which holds that the pursuit of subsistence and the reproduction of the population are fundamentally interdependent (populations must both produce and reproduce if they are to survive), attention was focused on the Easterlin hypothesis (Easterlin 1987a), which holds that at certain historical junctures, demographic factors such as cohort size have the potential to become independent variables of inequality. The premises were employed to argue that the economic-demographic interactions of minority ethnic group cohorts are likely to be interdependent with those of the numerically and/or politically dominant group. The key question is whether or not this effect proves to be negative or positive, and the extent to which period factors such as historical events, opportunity structures, and policy appear to be involved.

Importantly, both theories of ethnic stratification and of ethnic fertility differentials were shown to have considerable correspondence, and moreover, for these premises to have seen widespread empirical application. The task of this chapter, and indeed the objective of this thesis, is to bring about a synthesis whereby the overall argument can be empirically investigated. That is to say, the thesis seeks to examine the

extent to which the processes of ethnic stratification might be at least partially maintained by the interactive effects of internal colonialism and total social production, with emphasis on the role of demographic reproduction. The analytical framework for this task is now outlined, followed by an elaboration of the various techniques and indices. The chapter concludes with a brief review of the strengths and limitations of the overall approach, leading on to Chapter 5 in which a full critique and discussion of the thesis data sources is given.

4.1 TOWARDS AN ANALYTICAL FRAMEWORK

Validation or refutation of the key arguments of this thesis essentially depend upon whether or not trends in economic production and demographic reproduction for each ethnic group tend toward convergence or divergence; and whether or not the trends for each ethnic group appear to be linked, both within and between ethnic groups. These postulates can be restated as four loosely testable hypotheses, each of which are further elaborated below. By 'loosely testable' is meant that in attempting to draw together a number of theoretical and empirical approaches in search of a deeper understanding of the processes of ethnic stratification, rather than being satisfied simply with its description, there is a need for some sacrifice of rigour.

Reflecting Hechter's argument that a cultural division of labour will see production-related differentials continually recreated, it can be stated that:

(1) *over the long term, divergent or parallel trends in production-related variables (labour force and employment status; industrial and occupational distribution; educational qualifications; income) will essentially support the argument of a cultural division of labour, whilst convergent trends will essentially refute it.*

Reflecting the 'birth and fortune' argument of Easterlin (1987a) that cohort size is a potential cause of socio-economic inequality, and vice versa—and ignoring for the moment both the effects of migration and factors exogenous to the cohort, such as changes in socio-economic policy and technologically- and politically-induced changes in productivity, it can be stated that:

(2)(i) e*specially small (trough) cohorts experience lower levels of competition for jobs and earnings than do especially large (peak) cohorts, and as a result begin their family formation earlier and have more children than do large cohorts;*

(2)(ii) as *a result of these dynamics, trough cohorts are followed a generation later by peak cohorts, and peak cohorts are followed a slightly longer generation later by small cohorts, creating a self-generating cycle of inter-cohort inequality.*

Expanding Easterlin's premises at the level of the ethnic group, it can be stated that:

(3)(i) *where different ethnic groups have differing relationships with economic production, their demographic regimes and thus their age structures are also likely to be different, and vice versa.*

(3)(ii) *the size of the cohorts of the dominant group can be expected to have more influence on the employment and earnings experience of the cohorts of a minority group than vice versa.*

Drawing these arguments together within the total social production arguments of Cordell et al. (1987, 1994:23-24), namely, that economic production and demographic reproduction (manifested as cohort size and age structure) are fundamentally interdependent—and continuing to ignore the issue of migration and factors exogenous to the cohort—it can be stated that:

(4) *over the long term, both intra- and inter-ethnic trends in production and reproduction will be inter-dependent.*

These four 'hypotheses' comprise the underlying questions upon which Chapters 6-11 are based, although they are neither tested in a conventional sense, nor addressed in the order given. Instead, demographic reproduction is treated first as a dependent variable in relation to the processes of colonisation (Chapter 6), second as an independent variable in relation to a broad range of socio-economic indicators (Chapters 7-10), and third as both independent and dependent variables in relation to key socio-economic indicators (Chapter 11). The issue of migration and other factors such as changes in technology, the political economy and the policy environment in general are discussed in each chapter at the appropriate junctures. In the interim, it should be understood that these factors were generally acknowledged but not considered of major importance to the Easterlin hypothesis (e.g. Easterlin 1987a:16), which essentially treated the American population as a closed economy. Earlier contributions to the theory had, however, incorporated migration (Easterlin, Wachter and Wachter 1978).

Hypotheses 1 and 4 give rise to the underlying questions of Chapter 6, which examines the historical relationship between colonialism, the development of ethnic

stratification (reflecting economic production) and changes in the Maori and European age structures (reflecting demographic reproduction) over the period 1840-1940. Age structure is treated as a dependent variable, and the key question asked is whether or not it undergoes any substantial changes in relation to changing socio-economic/productive status.

Since, due to data limitations, it is not possible to test these hypotheses in conventional terms, the manner in which they are explored requires elaboration. First, in the absence of data on age structure for the early colonial period, it is necessary to use a proxy index, life expectancy at birth (e°_0). In the context of a high mortality population, as describes the Maori population following late-18th and early-19th Century contact with European, the greatest force of mortality is at the youngest ages, with the result that there are relatively low proportions at these ages, even when fertility levels are high (e.g. Pool 1991a:102). An increase in infant and childhood mortality (a decline in e°_0) would therefore see a further decline in the proportions at young ages, leading to a maturing of the age structure; a decrease would see the opposite. A substantial *directly* documented increase in e°_0 for the Maori population occurred between 1946 and 1956, when programs to eradicate tuberculosis first began to make their mark, and Maori e°_0 increased by approximately 17 per cent (Pool 1991a:145-151). By comparison, the magnitude of the increase for the following decade was in the vicinity of 7 per cent. Accordingly, a 'substantial' change in demographic reproduction during the early colonial period can be denoted by a change in e°_0 of similar magnitude to that occurring around the late 1940s.

Unfortunately, data limitations still mean that the relationship can be assessed only approximately, against estimations and back-projections developed by Pool (1967, 1977, Tables 4.6 and 5.5, 1991a:29-58, 77). However, as estimates of, and more detailed data on, age structure become available through the later 19th and early 20th centuries, 'substantial' can also be denoted by a change in the *direction* of the trend in the proportion of the population aged 0-14 years, from, for example, a consistently declining proportion, to a consistently increasing proportion.

Chapters 7-10 pick up the story as socio-economic data begin to become available for Maori, generally in the 1950s, but in some cases earlier. These chapters also follow the arguments contained in Hypotheses 1 and 4, but in these chapters age structure is treated as an independent variable. Each chapter and sub-chapter examines ethnic differentials and trends in the socio-economic variable(s) under investigation

through three main methodological techniques: (a) an historical overview based on simple percentage distributions, usually summarised as indices of dissimilarity (ID); (b) component analysis, whereby the component of the observed (crude) difference in the proportion of Maori and European/non-Maori with each characteristic that is due either to age structure or to the true (underlying) differential is demonstrated; and (c) age-specific and/or cohort analysis, the latter of which traces the experience of cohorts as they age. Unfortunately, data limitations generally restrict the two latter analyses to the 1976-1991 period.

These three techniques—discussed in more detail below—permit in each chapter an incremental shift from the macro- towards the micro-level, each level addressing a different issue. Each overview, for example, whilst unrefined in terms of factors like ethnic differences in age structure, gives an indication of the extent to which each ethnic group must accommodate certain realities, such as 'dependency', typically defined in relation to the population aged 15-64 years, and examined from a slightly different perspective in Chapter 7. Each component analysis, on the other hand, offers a basis for a more refined policy response to ethnic inequality. That is to say, policy measures seeking to address ethnic inequality—when developed—are typically directed at crude percentage point differentials. These crude indices often conceal the 'true' extent to which one or another population experiences advantage or disadvantage from one or another component (explained more fully below). They also conceal the fact that the various components often differ quite substantially by category. For example, age structure may give an advantage in the full-time employment category to one sex-ethnic group at one point in time, but not to part-time employment for the same group at the same point in time. Finally, each analysis by age group and/or cohort provides an opportunity to assess the universality or otherwise of the patterns and trends shown by the foregoing analyses. Cohort analysis, for example, permits a review of trends across the life cycle—albeit in most cases for three or four observations only (for five-year age groups at five-year intervals), the consequence of a dearth of relevant data. Specifically, the latter technique permits (a) an assessment of the universality or otherwise of patterns and trends both within and between cohorts (respectively, intra- and inter-cohort patterns and trends), and (b) the identification of intra-cohort 'lag effects', whereby, for example, low levels of employment or qualifications or income at the younger ages may be made up at older ages.

Positive points aside, it must be emphasised that both age-specific and cohort analyses identify the *probability* of a given group being in one or another category at one or another time, rather than the impact of the factor on the ethnic group as a whole. The distinction is important because age-specific indices are often seen as more valid comparisons of ethnic equality or inequality than aggregate ot crude indices, whilst in reality they ignore the potentially differing proportions of each ethnic group that the data pertain to. Component analysis, as outlined above and detailed below, provides a bridge between the two, although it too suffers from the fact that the size-effect of each category must be acknowledged separately.

Chapter 11 draws the foregoing together in an analysis which undertakes a limited examination of demographic reproduction as both independent and dependent variables of inequality. Aspects of all four hypotheses are involved, but the methodology is primarily concerned with Hypotheses 2 and 3. The key question in relation to demographic reproduction as an independent variable is whether or not ethnic differences in the key production-related factors of employment and income are a function of cohort size. In relation to demographic reproduction as a dependent variable, the key question is the extent to which the former findings result in either a delay or acceleration of the timing of family formation for each ethnic group.

Implicit within these two questions is also the issue of interdependence between ethnic groups. That is to say, as Hypothesis 3(ii) implies, the numerical dominance of the European population means that socio-economic and socio-demographic trends for Maori may not be independent of those of European, but instead may be a function of total cohort size (Maori and European combined). Accordingly—and in part by way of illustrating Easterlin's original formulation of the arguments (hereafter referred to as the 'classic' hypothesis)—Chapter 11 begins with a review of trends at the level of the total population. It then applies the arguments at the level of the ethnic group, considering cohort size in both absolute and relative terms. In the former case, the key question is whether or not the classic hypothesis holds true for *each* ethnic group, and the latter case the question is whether or not an increase or decrease in ethnic inequality may be correlated with an increase or decrease in the proportion of Maori *within* each total cohort, hereafter referred to as the 'expanded' Easterlin hypothesis.

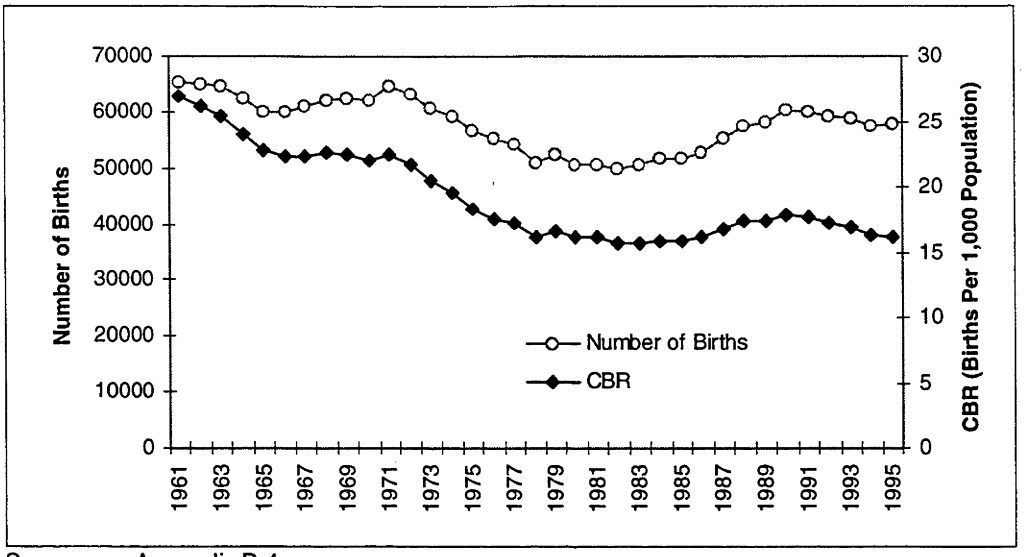
Aside from the latter expansion of the original hypothesis to facilitate analysis by ethnicity, three other methodological refinements to Easterlin's analytical model are made. The rationale for these changes are as follows. According to Easterlin (1987a:15),

two key steps are involved in testing his argument: (i) assessing the effect of earlier birth rates on relative numbers of workers when working age is reached, and (ii) assessing the effect of relative numbers of workers on earnings and employment experience. As regards step (i), Easterlin juxtaposes the CBR (births per 1,000 women) lagged by 20 years with the ratio of younger (15-29 years) to older (30-64 years) members of the working age population. As regards step (ii), he applies the younger-to-older framework to such factors as earnings, employment rates, female labour force participation, education, and income *vis-à-vis* the TFR. The latter is also used—implicitly more than explicitly—to assess changes in family size, but no elaboration of an analytical technique for examining the proposed shifts in the timing of fertility is given.

The first methodological refinement concerns the fact that—as Easterlin himself explains (1987a:54)—a key factor influencing the relative size of each birth cohort (also referred to as a generation by Easterlin, p.7) is the relative number of women of reproductive age. As a result, the CBR is not the best indicator of cohort size.[1] In New Zealand, as shown in Figure 4.1.1, the CBR in 1961 (the peak of New Zealand's baby boom) was 26.95, and in 1971 was 22.5, but the number of births over the period declined by only 1.4 per cent, from 65,390 to 64,460. This semi-stability of birth numbers was accounted for by an 18 per cent increase between 1961 and 1971 in the numbers of women at reproductive age, reflecting the arrival at childbearing age of the first of the baby boomers, born in the late 1940s and early 1950s. An especially large cohort (numbering 60,153) was also born around 1990, by which time the CBR had fallen to 17.9. This 'baby blip' reflected both the 'current' births of the post-peak baby boomers, and the 'recuperated' births of a sizeable proportion of the peak baby boomers who had earlier delayed their childbearing (Cheung, Jackson and Pool 1994; Jackson and Pool 1994:24), a conflation which simultaneously refutes and supports key points of Easterlin's hypothesis.

[1] This would appear to be even more so if the unit of interest was the age-specific group (e.g. females aged 20-29 years) that Easterlin stated he was concerned with, instead of the 'demographers standard "age structure" explanation of fertility' (Easterlin 1987a:54-55).

Figure 4.1.1
Crude Birth Rate and Number of Births, Total Population, 1961-1995



Source: Appendix D.4

Accordingly, and whilst acknowledging Easterlin's use of the CBR and TFR as weaknesses in the classic hypothesis, Chapter 11 explores the issue of cohort size as a cause of inequality by focusing directly on the actual size of the cohort. Furthermore, because the effects of migration and death *can* differ substantially by cohort, especially where the comparison is between cohorts born 20 years apart (cf. Easterlin 1987a:16, who states that these effects differ very little), Chapter 11 focuses on the size of the cohort at the key labour force entry ages, taken here to be 20-24 years.

The second—but closely related—methodological refinement concerns Easterlin's use of ratios of data for two very broad age groups, 15-29 and 30-64 years. Aside from the fact that these groupings are too blunt to be very useful analytical instruments, when examined over time the same persons appear repeatedly, first amongst the younger group, and later amongst the older group. Whilst this methodology is potentially useful for ascertaining the consistency of advantage or disadvantage for especially small or large cohorts across their life cycle, similar and sharper comparisons can be gained by comparing either the experience of 20-24 year olds *vis-à-vis* their cohort size across time, or the experience of true cohorts across their life cycle. Indeed, given that the Easterlin hypothesis is *centred* on the notion of the cohort, it is surprising that the latter was not the unit of analysis. The two latter options (direct comparison of data for 20-24 year olds, and 'true' cohort analysis) also have the advantage of being more readily amenable to analysis by ethnicity, since, under Easterlin's classic

methodology, ethnic relativities would become ratios of ratios. Accordingly, and whilst some broad age group relativities are used to illustrate the arguments at the level of the total population, the analysis by ethnicity focuses on the experience of 20-24 year olds across time, and of cohorts across their life cycle, albeit with data limitations restricting the latter to the 1976-1991 period.

The third methodological refinement concerns the part of the Easterlin hypothesis that relates to shifts in the timing of family formation and resulting family size. As noted above, these issues received little conceptual or methodological attention by Easterlin. First, the TFR is not a good indicator of changes in family size, since, like the situation in relation to the CBR, it conflates current births with recuperated births, those that were disproportionately deferred by some cohorts to later ages. Again, true cohort measures are the only means of assessing the trend. In New Zealand, the completed or cumulative fertility rate (CFR) has always been less volatile than the TFR, remaining well inside the latter's upper and lower bounds. For example, the peak CFR (3.5) this century occurred for the women born in 1931 who gave birth during the peak baby boom years, whilst the TFR at the peak of the baby boom was 4.2 (Khawaja 1985:157-159). Second, true shifts in the timing of family formation can be assessed only through examination of cohort age-specific fertility rates, or the mean or median age of each cohort at childbearing.

Despite the three points made, data limitations in fact make it very difficult to follow through with an analysis based entirely on the cohort. Detailed fertility data for Maori females became available only in 1962, whilst back projections by Bu (1993) extend the possibilities, but not very far. In addition, at the time of writing, completed cohort fertility rates can be computed only for cohorts born prior to 1950. Accordingly, in this thesis, it is not possible to examine all aspects of the hypothesis (Chapter 11 undertaking a limited exploration of the arguments only), and analysis pertaining directly to changes in family size is not undertaken. Instead, the indicator used for assessing demographic change as the dependent variable of inequality arising from cohort size is the timing of family formation. Specifically, it is the age at which the peak age specific fertility rate (ASFR) has occurred for each cohort that has passed this juncture, such an index not requiring completed fertility data (see also Jackson, Pool and Cheung 1994). In relation to analysis by ethnicity, where the age structures of the two ethnic groups in question are very different, this index is also superior to that of the median age of

childbearing, which is influenced by the relative proportions of women at each age in each ethnic group.

Finally, the fact that Chapter 11 undertakes only a limited exploration of the arguments must be emphasised. In applying the Easterlin hypothesis at the level of the ethnic group, an analysis that does not appear to have been carried out elsewhere—or at least, does not appear in the literature available to this thesis—and in working within the limitations imposed by both the data and the constraints of one thesis chapter, it is not possible to do more. For example, the identified weaknesses in the hypothesis indicate the need for component analysis to separate out age composition and recuperation effects (see Cheung, Jackson and Pool 1994, Chapter 3), an approach more suited to an entire thesis than a component of a single chapter.

To summarise, four main steps are involved in the task of examining ethnic stratification in a total social production context. The first (Chapter 6) involves an examination of the relationship between the processes of colonisation in New Zealand, the development of ethnic stratification between the Maori and European populations, and the changing age structures of the two populations. In that chapter, demographic reproduction (age structure) is treated as the dependent variable. The second step involves examining the effects of age structure on a range of socio-economic differentials, thus treating demographic reproduction as an independent variable of inequality. This exercise generates four further substantive chapters, one each on ethnic differentials in labour force status and employment status (Chapter 7); industrial and occupational distribution (Chapter 8); educational qualifications (Chapter 9); and income (Chapter 10). The third step (Chapter 11) involves the application of the Easterlin hypothesis (in a refined form), and an expanded version of the hypothesis, to appropriate data, drawn in part from Chapters 6, 7 and 10, and in part from fertility data not used elsewhere in the thesis. In that chapter, demographic reproduction is treated as both an independent and dependent variable. The fourth and final step (Chapter 12) considers the contribution of the total social production perspective to the study of ethnic stratification, and some of the implications of the findings.

4.2 INDEX CONSTRUCTION

Much of the analysis in Chapters 6-11 is based on percentages, percentage point differences, and ratios. These indices are referred to in the text at the appropriate

junctures, and need no detailed explanation here, other than to note that percentage point differences are generally the indices of preference because (a) a substantial *relative* improvement in a small category, for example, in the proportion of a population with a bachelors or post-graduate qualification from 1 to 2 per cent (a 100 per cent increase), can be very misleading; and (b) percentage point differences correspond with the index of dissimilarity, which is widely used throughout the substantive chapters. They are also more amenable to working with mean rather than median income data, the index preferred for Chapters 10 and 11 because of its greater sensitivity to changes in distribution. Four indices/techniques do, however, require more detailed elaboration: the proportionate ratio; the index of dissimilarity; component analysis; and cohort analysis.

4.2.1 The Proportionate Ratio:

The proportionate ratio is the ratio of the proportions of each ethnic group in each age-sex group (or any other compositional category). Its equation, which is comparable to the conventional technique of indexing a rate for a given observation to that for an earlier observation, is:

$$PR = pc_x/pc_y \quad \text{.....(1)}$$

Where PR = proportionate ratio; pc = the proportion of the ethnic group in compositional category *c* (e.g. the age-sex group); *x*, *y* = ethnic groups *x* and *y*.

4.2.2 Index of Dissimilarity:

Originally designed to measure the degree of residential segregation by race (Duncan and Duncan 1955:493-503), the formula for this index in relation to occupational segregation by ethnicity is:

$$ID = \sum [X_b - Y_b]/2 \quad \text{.....(2)}$$

Where X_b represents the percentage of employed males or females of ethnic group X in a given occupational category *b*; Y_b is the percentage of employed males or females of ethnic group Y in the same category; and ID (Index of Dissimilarity) is the minimum percentage of males or females of ethnic group Y who would have to change occupation for their occupational distribution to be identical to that of males or females of ethnic group X.

Any other compositional category (e.g. an industrial or qualification category) can be substituted for *b* to derive an index of dissimilarity for any other social indicator (e.g. industry or qualifications). A result of 100 would indicate complete dissimilarity, whilst an index of 0 would indicate complete unity. However, a number of problems have been identified with this index. First, the number of categories (or classes) influence the results (Shryock and Siegel 1976:233). The results (e.g. an index of dissimilarity of 20 for occupation) are thus of greatest value when compared with similarly computed indices, and of least value when compared with indices for other social indicators. The problem also means that what is a high or low index is somewhat arbitrary (cf. Hugo 1986:97, who proposed that an index below 20 would indicate little dissimilarity, whilst one exceeding 50 would indicate significant dissimilarity). Accordingly, this thesis is more concerned with the direction of trends in each resulting index, than with their absolute levels.

Second, when applied to occupational segregation, the index of dissimilarity has been argued to be deficient in that it assumes that the different occupational categories and the numbers of different ethnic groups and/or of males and females within them, comprise equal proportions of the labour force (Gibbs 1965; Karmel and MacLachlan 1988; Fargher and Maani 1993). Closely related is the argument that if the workforce *were* to be redistributed in the manner implied by the index of dissimilarity, there would be consequential changes in the occupational structure (Karmel and MacLachlan 1988:188). Discussion of the measures proposed to alleviate these problems can be found in Appendix A. However, Jones (1992) argues that such measures have the potential to render analysis unsatisfactory and potentially misleading, by implying that the smaller the group, the less its degree of pure segregation matters. Arguing that weighted indices are more concerned with 'replacement' than with dissimilarity, Jones argues that the index of dissimilarity developed by Duncan and Duncan remains valid for the purposes of demonstrating segregation. Accordingly, it is the index of dissimilarity based on that formulation that is used in this thesis.

4.2.3 Component Analysis:

As Carmichael (1995:33) explains, any summary measure is a product of at least two things: (i) the underlying level or incidence of the phenomenon of interest (the specific measure), and (ii) the composition of the population for which the calculation is made, that is, the extent to which the population is concentrated in compositional

categories (defined by, for example, age, sex, marital status, education or employment status) where the phenomenon of interest is particularly likely or unlikely to occur. If the effects of (ii) are not controlled (assuming choice of the correct variables to standardise for, and use of sufficiently detailed compositional categories), any ratio-type measure used to make comparisons either within or between populations, at either a single point in time or over time, is at risk of yielding distorted comparisons. For example, change or differences in the underlying level of a phenomenon and in the composition of the population can be operating in opposite directions, the observed change or differences in the summary measures being the net effect of these opposing forces.

Because it is the intention of this thesis to focus attention on these underlying factors, rather than to render them invisible as is often the case in analyses concerned with similar issues, the problem is addressed in two ways. First, it utilises component analysis (often referred to as decomposition analysis), a refined form of standardisation that splits the difference between two summary measures (in this case, the crude differential between Maori and European), into components that are attributable to (a) differences in age structure, and (b) differences in the underlying level of a composition or phenomenon (e.g. occupation). Second, where the former approach is inappropriate, it standardises data for the Maori population to the age and/or compositional categories of the European population.

With minor alterations to the notation, Carmichael's (1995:51) formula for component analysis is:

$$Csm = 0.5\,[M(1) - M_{s1}(2) + M_{s2}(1) - M(2)] \quad \text{.....(3)}$$

$$Cc = 0.5\,[M(1) - M_{s2}(1) + M_{s1}(2) - M(2)] \quad \text{.....(4)}$$

Where:

Csm	=	Component due to differences in the underlying characteristics
Cc	=	Component due to differences in population composition
M(1)	=	Summary Measure 1, relates to Population 1
M(2)	=	Summary Measure 2, relates to Population 2
$M_{s1}(2)$	=	Summary Measure 2 directly standardised to Population 1
$M_{s2}(1)$	=	Summary Measure 1 directly standardised to Population 2

As detailed in Carmichael (1995:52-53), these algorithms are based on standardising the summary measures for each population against the age composition of the other, to derive alternative expressions for Csm and Cc, which may have slightly

different values. The two values are then summed and averaged (see Appendix B for the underlying rationale). Interpreting the results from these equations then proceeds in a manner similar to that associated with standardisation *per se* (described below), only in the case of component analysis it is the sign (+ or -) on *each* component that is important, and how this sign compares with that on the overall difference between the two original (unstandardised) summary measures. If the sign on a component is the same as that on the overall difference, that component helped produce the overall difference. If the sign on a component is opposite to that on the overall difference, that component has partially offset, or moderated the overall difference (i.e. made it less substantial than it would otherwise have been). Importantly, the standard population must match precisely the denominator for the summary measure that is being decomposed. That is to say, if the summary measure is that for labour force *participation* for the population aged 15+ years, the standard population must be the *population* aged 15+ years. If, on the other hand, the summary measure is the proportion of persons *within* the full-time labour force who are in a given labour force category, the standard population must be the full-time labour force.

In this thesis, both component analysis and standardisation *per se* have been carried out using the process of direct standardisation, the formula for which is:

$$M_s(i) = \sum c\, m_i(c).p_s(c) \quad \text{.....(5)}$$

Where $M_s(i)$ denotes the summary measure for population *i* standardised to the composition of population *s*; *c* denotes the compositional categories defined using the variable(s) for which we are standardising (age, age-sex categories); $m_i(c)$ denotes the specific measure equivalent to M(i) for compositional category *c* for population *i*; and $p_s(c)$ denotes the proportion of the standard population *s* in compositional category *c* (Carmichael 1995:39, with minor alterations to the notation).

Interpretation of the result proceeds by comparing the summary measure for the standardised population with either its unstandardised equivalent or with the measure for the standard population (which is itself unstandardised). Interpretation also rests on one important axiom, that is, that standardised measures are hypothetical. That is to say, 'standardised values are values we would *expect* the summary measure in question to take on *if* the standard population composition, rather than the actual composition, prevailed' (Carmichael 1995:38). This means that no significance can be attached to the

absolute levels of the standardised summary measures, only to comparison with other measures standardised using the same standard composition.

Chapters 7-9 employ both component analysis and simple standardisation. In Chapter 10, which deals with income differentials and with additional compositional factors, only standardisation is used. The latter approach is taken is because the multiple offsetting effects that derive from the multiple components complicate interpretation whilst adding very little to the picture that can be presented by simple standardisation. In all cases, however, both standardised and unstandardised results are shown.

4.2.4 Cohort Analysis:

The fourth and final key technique used in this thesis is that of cohort analysis, equations for which are:

$$Kpci_x = pci_x^{t} \ldots\ldots pci_x^{t+n} \quad (6)$$

$$Kpci_y = pci_y^{t} \ldots\ldots pci_y^{t+n} \quad (7)$$

$$Kr^{t\ldots t+n} = (Kpci_x / Kpciy)^{t\ldots t+n} \quad (8)$$

Where K denotes cohort analysis; pci denotes the proportion of the cohort in the compositional category of interest *i* (e.g. labour force status and/or educational level and/or income); *x* and *y* denote ethnic groups x and y; *t* denotes time; *n* denotes the nth observation; and r denotes the ratio of values for ethnic groups *x* and *y*.

According to Ryder (1965:845), who proposed cohort analysis as a way of attempting to understand social change, 'a cohort may be defined as an aggregate of individuals ... who experience the same event at the same time interval' (see also Shryock and Siegel 1976; Glenn 1977; Hagenaars 1990). Typically this common event is birth, but cohorts are also regularly identified in relation to such events as labour force entry, marriage, and reproduction. Methodologically it is useful to have a mental picture of how data for cohorts are assembled. As shown in Figure 4.2.1, the process utilises the well known Lexis grid, a matrix organised so that data for given social groups (e.g. five year age groups) correspond to the period for which the observation pertains. The *intra*-cohort experience is then traced by reading any diagonal down and to the right; the *inter*-cohort experience, by comparing the diagonals. Data on each diagonal are thus considered as pertaining to each cohort. As regards the validity of this assumption, two

caveats are important. First is the distinction between 'open' and 'closed' cohorts. For various reasons, such as entry into cohorts by immigration, and out via emigration and death, demographic cohorts do not constitute closed populations. Pure, closed cohorts can be captured only through the use of micro-level and panel studies in which the same individuals are traced over time.

Figure 4.2.1
The Lexis Grid

Age Group and Year of Birth	1976	1981	1986	1991
20-24 (Born 1952-56)	A			
25-29 (Born 1947-51)	B	A		
30-34 (Born 1942-46)	C	B	A	
35-39 (Born 1937-41)	D	C	B	A
40-44 (Born 1932-36)		D	C	B
45-49 (Born 1927-31)			D	C
50-54 (Born 1922-26)				D

Of particular importance to this thesis, Easterlin, Wachter and Wachter (1978) argue that at certain historical junctures, employment opportunities may be more affected by migration than by the dynamics of natural population growth. Prior to World War II, swings in the US labour supply were largely influenced by migration, whilst post-war their cause has been the lagged effect of the birth rate. Given that net migration into New Zealand over the early 1970s was considered 'high', and in 1974 peaked at more than 33,000 persons, accounting for more than 48 per cent of New Zealand's population growth in that year (Demographic Trends 1993, Table 1.5) and equating at the time to approximately 13 per cent of the Maori population, it is essential to acknowledge migration in the methodological framework for this thesis. However, since migration data are not readily available by ethnicity, it is impossible to do any more *than* acknowledge its potential impact. That is to say, both European/non-Maori and Maori

populations are of necessity treated as closed populations, but the potential effects of migration are acknowledged at the appropriate junctures.

The second caveat to cohort analysis is that at least three inter-related effects are simultaneously present. These are age, period and cohort (Hagenaars 1990). The age-effects refer to biological, psychological and sociological factors, examples of which are, respectively, sexual maturity, personality, and legal age of leaving school or entering the labour market. These effects may be mutually compensating; for example, increasing age may have a positive effect on income—at least until a certain age is reached—but a negative effect in terms of increasing obsolescence of skills, leading to early redundancy and lower income. An age-specific effect refers purely to the measure for a given age group. Period effects, by contrast, refer to events and circumstances that may occur to a cohort within a relatively short time duration in response to, for example, a war, a specific policy or the restructuring of an entire political economy. Finally, cohort effects refer to the unique experience of any given cohort, for example, its lifetime experience with respect to its fertility level, labour force participation, or mean income. Confusion between age-specific and cohort effects can be avoided by realising that whilst both essentially refer to the same unit of analysis, cohort effects refer to cumulative experience, based on observation of age-specific rates as the cohort ages. Similarly, the difference between period and cohort measures requires the distinction between synchronic and diachronic techniques, the former deriving cross-sectional (snap-shot) perspectives; the latter, the longitudinal perspective illustrated by the Lexis grid.

In reality, all three effects are mixed together, and their separation one from the other can never be complete. Indeed, when looked at from this existential perspective it can be seen how very difficult interpretation of any single factor is rendered. Not only may mutually compensating effects be occurring, but interpretation may also be quite different in circumstance *a* or *b*. Nevertheless, for analytical purposes, the different factors can be usefully separated into dependent and independent variables. For example, period events or circumstances, such as economic restructuring (independent variable) may result in high levels of youth unemployment (dependent variable). When encountered by a population with an age structure that is particularly vulnerable to those specific events or circumstances (independent variable), the outcome may be longer term cohort effects (dependent variable). Restated in terms of the central concerns of this thesis, period effects such as increased competition for age-related resources, encountered simultaneously by two ethnic groups with dramatically different age

structures, could be expected to have different effects on the cohorts of each group, and ultimately on each group as a whole.

4.3 STRENGTHS AND WEAKNESSES, A BRIEF ACKNOWLEDGMENT

The strengths and weaknesses of this study can be approximately divided into two dimensions: conceptual/theoretical, and methodological/analytical.

As regards the conceptual and theoretical dimensions, ethnic stratification between Maori and European New Zealanders has already been substantiated across a broad range of historical and contemporary studies, and there is thus strong support for the arguments associated with internal colonialism. That said, however, very few such studies have examined the issue empirically over time, nor have they paid more than superficial attention to the potential role of ethnic differences in age structure in recreating—or ameliorating—ethnic stratification. Extrapolating from this position, and recognising that ethnic fertility differentials are generally—although not exclusively—understood by demographers to reflect socio-economic inequalities, it also seems justifiable to argue that the relative age structures of the Maori and European populations are—at least to a considerable extent—a consequence of ethnic stratification.

Applying the Easterlin hypothesis at the level of the ethnic group also seems to have considerable merit because, if cohort size is indeed a cause of intergenerational inequality, the age structure of a numerically dominant population would be likely to affect the employment and earnings experience of a proportionately small population. Furthermore, in attempting to refine Easterlin's methodology for these purposes, the use of sharper analytical tools (i.e. narrower age groups and 'true' cohort analysis) can also be expected to assist in the development of the theory, and of the theory of demographic change in general.

Alternatively, critics might argue that New Zealand's ethnic differentials may not be socio-economically derived but instead, largely cultural in nature, and that an approach that gives more recognition to the latter should have been adopted. In this regard the thesis takes the position of Smith, Kertzer and others cited in Chapter 2, that what is cultural and what is socio-economic is so intertwined that it defies analytical separation. Instead, if there are major weaknesses in the methodology they pertain to (a) the exclusion of other ethnic collectivities, such as the Pacific Island and Asian/Other

populations (which together comprise the remaining 8 per cent of New Zealand's total population), a decision made on the grounds of insufficient data; and (b) in Chapters 7-11, the methodological/analytical assumption of 'closed' populations. Because migration data are not available by ethnicity, the thesis must largely ignore its effects. The issues of ethnic classification, intermarriage (or inter-ethnic partnering and births) and data discontinuity are, however, considered in some detail the following chapter.

5

DATA SOURCES, A CRITIQUE AND DESCRIPTION

5.0 INTRODUCTION

One significant methodological problem arises in the course of this exercise: that of data discontinuity, with specific reference to the issue of ethnic classification. The problem as it relates to ethnicity is due in part to changes over time in data collection procedures and their associated definitional criteria; in part to inter-ethnic births; in part to 'category jumping', whereby individuals—either purposefully or inadvertently—move from one ethnic designation to another between censuses and other time-series collections; and in part to differences in these factors between data collections (Pool 1961, 1963, 1964, 1977, 1991a; Brown 1983; Department of Statistics 1988; Mulgan 1989; Morrison 1991; Gould 1992). Along with these discontinuities are also those deriving from temporal changes in the census criteria used to define labour force and other socio-economic categories.

The consequences of the problem are far reaching, affecting everything from socio-economic and demographic categories in general, to the construction of rates by ethnicity, wherein the numerators and denominators do not always come from collections based on the same criteria. This chapter turns first to the intertwined issues of ethnic classification, inter-ethnic births, and the construction of ethnic indices, and then to a description of the thesis databases, wherein the remaining issues are addressed.

5.1 THE STATISTICAL CLASSIFICATION OF 'MAORI'

Historically, two disparate criteria have been used to classify Maori and other New Zealanders into racial and ethnic groups: the concept of biological descent, that is, the proportion of racial blood believed to be contained within an individual; and more recently, the notion of cultural affiliation, whereby people who self-identify with a distinctive historical, cultural and linguistic experience contrast themselves against other such groups. Until September 1995, all vital registrations (births and deaths) data were based on the former. The census, on the other hand, used variations of the former from

the first Maori census in 1867[1] up to and including the 1971 Census, whilst since 1976 combinations of both biological and cultural criteria have been used (see Appendix C).

As a result of these procedures, and in deference to the 1974 Maori Affairs Amendment Act,[2] the census until and including 1971 defined as a 'Maori' a person with half or more Maori blood (Sole Maori), and since and including the 1976 Census as a person with *any* degree of Maori blood, the questions enabling both Sole Maori and Maori Ancestry populations to be enumerated. That is, until the 1976 Census those persons whose blood fraction fell below 50 per cent were not classified Maori, regardless of their own preferences. The same criteria obtained for Vital Registrations data until 1995, with only births and deaths registering 50 per cent or more Maori blood being classified Sole Maori (discussed further below).

Although reflecting a quest for greater validity of ethnic classification, the changing criteria render the compilation of ethnic statistics over time highly problematic, especially during the period 1976-1991. However, at the 1986 and 1991 Censuses, the use of questions covering both ethnicity and descent enabled three major classifications of ethnicity to be enumerated: Maori Ancestry, Maori Ethnic Group, and Sole/Single Origin Maori. The numbers in each of these classifications in 1991 were, respectively, 511,278; 434,844; and 323,493. By re-running the census master files for the period 1976-1986, Statistics New Zealand have been able to generate socio-economic and base population data for that period similar to the Maori Ethnic Group classification. The result is an internally consistent database for those years, from which two of the databases used for this thesis (described below) were derived. Similarly, at my request and to my specifications, Statistics New Zealand generated a fertility database (also described below) that also approximates the ethnic group classification.

It must, however, be acknowledged that data gathered on biological criteria prior to 1986 may also reflect the Maori Ethnic Group classification more than the narrower Sole/Single Maori Origin classifications. According to at least five highly reliable sources—Metge (1976:42), Pool (1977:44-45, 1991a:24-34, and *passim*) the New Zealand Department of Statistics (1988), Morrison (1991) and Gould (1992)—Maori may have always identified themselves on a mixture of cultural and biological criteria. That is to say, 'even where the census question was framed in terms of genetic

[1] The Maori population was partially enumerated for the first time in 1857-8 (Department of Statistics 1988:44). Prior to that date, data come mainly from local 'head counts'.

[2] This Act defined a Maori as a person of the Maori race of New Zealand *inclusive of any descendant of such a person* (Department of Statistics 1988:46-7).

composition, many respondents already selected their answer to it on cultural/ethnic criteria' (Gould 1992:38), a phenomenon discernible as far back as the 1926 Census (Department of Statistics 1988:46). As part evidence, Gould, for example, cites the phenomenon of *heaping*, the practice of choosing the nearest blood fraction, whereby at the 1981 Census the largest proportions of Maori reported 'full' or 'half' Maori blood, rather than fractions in between. Gould also found considerable correspondence between these data and the blood fraction recorded by name-matched individuals in the Department of Statistics' 1980/81 Social Indicator Survey (Gould 1992:41). These caveats, which indicate less discontinuity than might otherwise be apparent from the foregoing comments, should be kept in mind when observing historical trends in the following chapters.[3]

Indeed, there is a general concurrence that the census provides a reasonably consistent time-series of Maori data up to and including 1981, although Gould (1992) suggests that where historical trends are being examined, data from the 1976 Census should be excluded. After 1981 he proposes that the approximately equivalent data are One-Ethnic Origin Maori for 1986 and One Ethnic Group Maori for 1991. The latter proposals are followed in this thesis. However, where historical trends are being established, data for 1976 are included, with the caveat that the internally consistent databases for the period 1976-1991 provide a useful comparative base.

5.1.1 Intermarriage: Conceptual, Methodological and Substantive Considerations:

As noted in Chapter 2, inter-ethnic marriage/partnering and the births resulting from such unions are of particular relevance to the issue of ethnic stratification, not only because of the commonly posed question in New Zealand, 'when is a Maori a 'Maori'?' (see especially Pool 1963, 1991a:11-25), but also because of their potentially assimilative or integrative role (e.g. Gordon 1964). The two factors are of course inherently linked. An individual born of two (or more) racial or ethnic groups will typically be exposed to the physical characteristics and cultural environment of both parents and/or their broader familial networks, rendering the idea of fixed boundaries between such groups—racial *or* ethnic—meaningless.

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[3] On a more pragmatic note, it is also worth observing that few people of any ethnicity are likely to be able to readily compute their blood fraction, especially those persons and populations who/which had little formal education.

Although regularly noted as being widespread, very little empirical evidence regarding the extent of inter-ethnic partnering between Maori and European has been published. By and large this is because ethnicity is not recorded on marriage registration certificates, whilst Maori are somewhat more likely than European to be in *de facto* unions (Carmichael 1996:27). However, two potentially useful sources of information are available. First are the vital registrations data which, as mentioned above, have been used historically to construct the biological race of each birth. Table 5.1.1 shows how the first part of this process was achieved. All cells with a combined fraction of 50 per cent or more Maori blood were taken to indicate Sole Maori births (in 1991, 6,946 births). From this table the proportion of births which had parents of differing 'racial' groups can also be ascertained. In 1991, there were a total of 9,725 births where at least one parent was Sole Maori, that is, at least one parent claimed a Maori blood fraction of 50 per cent or more. For only 3,557 (36.58%) of these births, however, were both parents Sole Maori. The remaining 63.42 per cent of these births thus had one Sole Maori and one non-Sole Maori parent.[4]

Table 5.1.1
Registered Births by Combined Blood Fraction of Parents, 1991

	Father						
Mother	Non-Maori	25% Maori	50% Maori	75% Maori	100% Maori	Not Specified	TOTAL
Non-Maori	37498	841	881	180	438	5608	45446
25% Maori	878	527	304	62	394	512	2677
50% Maori	858	305	1091	117	468	629	3468
75% Maori	112	29	78	152	39	73	483
100% Maori	625	379	377	20	1215	658	3274
Pacific Is.	3824	76	122	17	102	512	4653
TOTAL	43795	2157	2853	548	2656	7992	60001

Source: Unpublished data, Statistics New Zealand, Table 20060

Legend:

Births classified Sole Maori (50% or more Maori blood) = 6,946)

Parents classified Sole Maori (50% or more Maori blood) = 9,725

Parents in Maori Ethnic Group (25% or more Maori blood) = 12,559

[4] Births which had blood percentages other than 25, 50, 75 and 100 per cent are apportioned by Statistics New Zealand to their closest rounded proportion. Births where the father's ethnicity is not specified, but are born to women classified Sole Maori, are all classified Sole Maori (Statistics New Zealand, personal communication).

Similarly, if a broader definition of Maori is used—this definition considering all persons with 25 per cent or more Maori blood to belong to the broader Maori Ethnic Group, it can be calculated that of the 12,559 births where at least one parent was Maori, 38.32 per cent (4,813) of these births had one non-Maori parent. Thus, although reproductive couples do not account for all members of the population, a rough estimate of the extent of inter-ethnic partnering can be calculated: if a narrow definition is employed, approximately two-thirds of Maori of childbearing ages are currently in inter-ethnic unions; if a broader definition is used, approximately one-third.

The second source of data on intermarriage or inter-ethnic partnering is the five-yearly census, which at most censuses has collected the racial, and more recently the ethnic, group of both parents (or adults) in two-parent and couple-only families. A similar method to that just described for birth data was employed in the 1951 and 1956 Censuses to establish the extent of intermarriage in the Auckland district, through examination of the parenthood of all Maori-origin children under the age of 15 years (Census of Maori Population and Dwellings, 1951, vI, pp.4-8 and vIII, pp. 66-68; 1956, vIII, pp. 33-38). The 1956 Census (p.33) recorded that 97 per cent (46,603) of such children had parentage such that they would be classified Sole Maori.

An alternative approach, similarly drawing on census data, is presented in Figure 5.1.2, which shows the ethnicity of adult partners in all two-parent and couple-only families at the 1991 Census. The data in the last column show that in just over fifty per cent of all families where one partner claims Maori ethnicity, the other partner claims European ethnicity. On this indicator the extent of inter-ethnic partnering for Maori can thus be understood to be around fifty per cent.

Table 5.1.2
Ethnicity of Parents in Couple-Only and Two-Parent Families, 1991

	Couple Only Families		Two Parents Plus Dependent Children		Two Parents Plus Dep. + Adult Children		Mean (W) across 3 Family Types	
	Maori*	European^	Maori*	European^	Maori*	European^	Maori*	European^
Both Partners Same Ethnicity	30.66	89.27	39.20	83.69	51.40	84.45	40.42	85.80
One Partner Maori, One European	61.38	4.87	51.30	9.00	40.69	8.81	51.12	7.56
One Partner Pacific Is.	3.80	0.79	5.28	1.54	3.88	1.65	4.32	1.33
One Partner Asian/Other	0.77	1.08	0.73	1.48	0.46	0.79	0.65	1.12
One Partner Ethnicity Not Specified	3.39	3.99	3.49	4.28	3.58	4.31	3.48	4.19
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	22953	289215	42987	244968	9135	42201	25025	192128

Notes: *Percentage of families in each category with one Maori parent.
^Percentage of families in each category with one European parent.
(W) Mean weighted by family type.

Source: Supermap

The patterns differ quite substantially for each ethnic group by family type. In couple-only families, for example, Maori are more likely than in any other family type to be in an inter-ethnic union. For European in this family type, this is less likely to be the case. The disparity may reflect the differing age structures of the two populations, the younger age structure of the Maori population reflecting the higher proportions of *de facto* couples noted above; the older age structure of the European population reflecting higher proportions of older 'empty nesters'. If so, the data suggest an increasing gradient of inter-ethnic partnering, the younger the family, the more likely for it be inter-ethnic. This intuitively correct suggestion is further supported in the data for two-parent families, those with 'dependent children only' having higher proportions of inter-ethnic unions than those with dependent plus adult children.

The implications of these findings for the study of ethnic differentials in New Zealand could be very large. For example, youth dependency (the ratio of 0-14 year olds to 15-64 year olds) will be greater for Maori because children from inter-ethnic marriages (or relationships) tend to be classified as Maori. Similarly, the financial support of an unemployed 15-24 year old Maori will often be shared between one Maori and one non-Maori parent. These points need to be kept in mind when interpreting the findings of the following chapters. However, it is a central contention of this thesis that it matters very little whether or not an individual is, *technically* speaking, a 'Maori'. When the socio-economic data for all of those persons who *claim* to be Maori are aggregated, the results cluster disproportionately around the lower bounds of a broad range of social indicators. If, on the other hand, data for those persons who some observers might 'objectively' consider not to be Maori were reassigned to the non-Maori/European statistics, the result would almost certainly *increase* the socio-economic differentials between the two groups. This outcome would occur because those who acknowledge Maori ancestry but do not affiliate with the Maori ethnic group are believed to have socio-economic characteristics closer to the non-Maori majority (Mulgan 1989; Pool 1976, 1991a:14-15; Gould 1992:43, 64-5). That is to say, the two-part ethnicity question (ancestry plus cultural affiliation) used in the 1991 census suggested that the number of persons who claim Maori ancestry is approximately 20 per cent greater than the number who claim cultural affiliation (Gould 1992). Inclusion of data for such Maori ancestry persons in the Maori Ethnic Group statistics would

therefore be likely to cause a favourable skewing of the socio-economic characteristics of the latter, and a potential dilution of the true situation (Gould 1992:49).[5]

Thus, and although the widespread extent to which persons claiming to be of Maori (*or* European) origin are of mixed parentage must be both centrally acknowledged and constantly recalled throughout the following chapters, this thesis uses the term 'Maori' as a self-identified expression of ethnic affiliation, and accepts census data so classified at face value. Also, most of the analysis uses census data for both the numerator and denominator, so several of the problems noted above are lessened.

5.1.2 Ethnic Classification and the Construction of Fertility Indices:

Unfortunately, somewhat less confidence can be placed in the ethnic classifications underlying the fertility-related components of this thesis, at least in part because these data have often not reflected self-identification. Instead, as with mortality data (McKegg 1996), the classification is often made by others (Department of Statistics 1988:123). However, as implied earlier, other issues are equally pressing. Since 1976 the differences in ethnic classification between vital registrations and the census have had significant implications for the construction of ethnic fertility rates, their numerators coming from the former and their denominators from the latter (Pool 1964, 1977, 1981, 1991a; Pool and Sceats 1981; Brown 1983; Sceats and Pool 1985; Khawaja 1985, 1986).

In addition are two less often acknowledged but equally significant issues, these being that—as described above—the numerators of published ethnic fertility rates (numbers of births) are themselves constructs, derived from the combined blood fraction of the mother and father; whilst the denominators are then chosen to match the resulting ethnicity and the age of the mother, whether or not it is in fact the actual ethnicity of the mother. That is to say, as was shown in Table 5.1.1, significant numbers of births to women of each ethnic group are methodologically cross-assigned to the other group, by virtue of their Maori blood fraction. As a result, all Maori fertility 'rates' published prior to 1995 are not rates at all, but ratios of, for example, births classified Sole Maori to women classified Sole Maori (Jackson 1995b). The same applies to non-Maori births.

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[5] This phenomenon is also suggested in Household Labour Force Survey (HLFS) data (1986), where unemployment rates for those who claim full Maori descent are highest, those for European are lowest, and those for European-Maori combinations lie in between, though generally closer to the Maori than the European rates.

Quantifying the difference between published rates (i.e. ratios), and rates more appropriately calculated using 'births by the age and ethnicity of the mother' in the numerator, Jackson (1995b) showed that the discrepancy resulted in a net underestimation of births to women classified Sole Maori by 7 per cent in 1976, 4.8 per cent in 1981, 11.5 per cent in 1986, and 3.9 per cent in 1991. Similarly, Sole Maori age-specific fertility rates (ASFRs), Total Fertility Rates (TFRs) and the resulting ethnic differentials between Maori and non-Maori were all a little greater over the period than previously recorded. Nevertheless, the age-specific discrepancies were quite minor, and thus the ratio data can be considered to provide an acceptable indication of historical patterns and trends.

That said, in terms of this thesis, another technical problem arises. For much of the analysis, socio-economic data for the period 1976-1991 are based on the Maori Ethnic Group and non-Maori/European classifications. These data are also used in Chapter 11, which, among other things, considers the relationship between cohort size, socio-economic differentials and ethnic differences in the timing of childbearing. Accordingly, as noted above, a fertility database utilising the Maori Ethnic Group classification was sought from Statistics New Zealand.

5.2 DESCRIPTION OF DATABASES[6]

All data for the substantive chapters of this thesis are drawn from either published material based on the quinquennial censuses or annually released vital registrations data, or from the specially derived databases also compiled from these sources and referred to above. In general, historical trends are based on the former, and the more detailed component and cohort analyses on the latter. It should be noted, however, that in no instance where historical data were drawn from the published work of other researchers, was it possible to undertake the component and cohort analyses directly on those data. In general, either those data were given for Maori and total populations, and required conversion to Maori and non-Maori classifications; or the age-specific data necessary for the standardisation and component analysis procedures were absent; or the age groupings differed by ethnicity. These limitations meant recourse to

[6] I gratefully acknowledge the generosity of Professor I. Pool, Director of the Population Studies Centre, University of Waikato, New Zealand, for making available to me the two databases (A and B) described below, and that of Statistics New Zealand for the provision of Database C.

the original data sources and the compilation of a series of sub-databases, each of which are given in the appendix to the relevant chapter. For the sake of clarity, the various sources and their strengths and limitations are discussed by chapter.

5.2.1 Chapter Six (Historical Overview):

Data for Chapter 6 are either drawn directly or compiled from published sources, and comprise a mixture of historical qualitative and quantitative material. By and large the latter pertain to population dynamics and trends only (numbers, fertility, life expectancy and migration); all tables and figures are appropriately footnoted, and no additional comment is required.

5.2.2 Chapter Seven (Labour Force Status and Employment Status):

Diachronic analysis of labour force and employment status by ethnicity—with a focus on the effects of age structure—is fraught with difficulty. Three major problems occur: lack of data prior to 1951, and by age for the period 1956-1971 inclusive; the changes in ethnic classification noted above; and changes in the definition of the various labour force and employment statuses.

The first of these problems means that much of the analysis in Chapter 7 pertains only to the period since 1951, and to the population aged 15+ years; and that the component and cohort analyses of labour force and employment status are generally restricted to the 1976-1991 period.

The second problem, that of census changes in the classification of ethnicity, means that there is a shift in the published data between 1986-1991 from the Sole/Single Origin Maori and non-Maori classifications used prior to 1991, to the Maori Ethnic Group and non-Maori classifications, although two caveats must be noted. First, in 1991, labour force status data for three ethnic classifications of Maori (Single Origin Maori; Maori Ethnic Group; Maori Ancestry) *were* published, but these data neither gave unemployment separately, nor disaggregated by any other than very broad age groups. As a result, the Sole Maori data are used to complete an historical overview of total labour force participation rates *per se*, but not for the remaining analyses. Second, the extent of the discontinuity appears to be very small, total full-time labour force participation rates for Sole/Single Origin Maori males and females in 1991 being 59.11 and 32.43 per cent, and those for Maori Ethnic Group males and females being 60.04 and 33.78 per cent (*Census of Maori Population and Dwellings* 1991, Table 35).

Third, the key discontinuities in labour force and employment status data pertain to whether or not part-time workers are included in the labour force; the hours that denote full- and part-time participation; and the criteria used for defining unemployment. Between 1891 and 1945, for example, anyone who either received an income for work or generated an income for someone else from their activity (thus 'assisting without wages') was considered to be 'actively engaged' and part of the census labour force (Rankin 1990:3). Between 1945 and 1981 inclusive, the census labour force consisted of those persons who worked full-time, then meaning 20+ hours per week, assisted as an 'unpaid relative', or were officially unemployed. In 1986 the census changed its definition of full-time work to 30+ hours, and for the first time included part-time work (1-29 hours). This move also bought part-time unemployment into the labour force for the first time.

Until 1981, the census criteria for classifying full-time unemployment were 'not employed' and 'available for work'. In 1981 'seeking work' was added, and in 1986 this was changed to 'actively seeking work'. In addition, from 1986, those unemployed but starting a new job in the next four weeks were considered to be employed. These changes made it progressively more difficult for individuals who considered themselves to be unemployed, to be officially classified as such. At the 1991 census, for example, only 74 per cent of those who indicated they were unemployed were officially classified as such (Statistics New Zealand, personal communication; Jackson 1994a:32).

The remaining persons are classified as 'not in the labour force'. This group includes women caring for children at home, the retired, and students who are not employed—those working either full- or part-time are enumerated in the labour force (Statistics New Zealand, personal communication). Given substantial reductions to tertiary education subsidies since 1989 (New Zealand University Students Association 1995), an increase in the number aged 15-24 years in employment in 1991 might be expected.

Contrasting with these complexities, most variables in the specially-derived Database A (described below) available for this thesis and covering the period 1976-1991 *are* internally consistent, due to regrouping of the census data by Statistics New Zealand. For example, the labour force data for all years were re-grouped to reflect the 1986 30+ hours full-time and 1-29 hours part-time definitions. Unfortunately these data are not disaggregated further, meaning that hours worked cannot be included in the

analysis.[7] There is one (probably minor) discontinuity in the data between 1981-1986, from full-time unemployment to full-time plus part-time. In both 1976 and 1981, only those persons seeking full-time work were able to indicate that they were unemployed. People seeking part-time work may have ticked the appropriate box, but the number doing so has never been estimated (Statistics New Zealand, personal communication). The shift is unlikely to have had a major effect, especially for males, less than 3 per cent of whom worked part-time in 1981. For females the comparative proportions were 17 per cent for European and 10 per cent for Maori. The conflation does not affect full- and part-time employment, data for which are given separately. Unfortunately, the database does not contain data on employment status (self-employment, wage and salary earner etc.). The full list of variables is shown in Table 5.2.1.

Table 5.2.1

DATABASE A (1976-1991)
Age (Five Year Age Group)
Sex (Male; Female)
Ethnic Group (European; Maori Ethnic Group; Pacific Island/Polynesian; 'Other', Not Specified)
Labour Force Status (Full-time 30+ hours; Part-time 1-29 hours; Unemployed; Not in the Labour Force; Not Specified)
Industry (Agriculture Hunting Forestry Fishing; Building and Construction; Community, Social and Personal; Electricity, Gas and Water; Finance, Insurance, Property; Manufacturing; Mining and Quarrying; Transport Storage Communications; Wholesale Retail Restaurant; Not Specified)
Occupation Administrative Managerial; Agricultural Forestry Workers Fishermen; Clerical; Production Transport Equipment Operators; Professional Technical; Sales Workers; Service Workers; Not Specified)

Database A is derived from the Census Personal Questionnaire and is comprised of a matrix table cross-tabulating the variables listed in Table 5.2.1. Each cell of the matrix records the numbers of the usually resident (*de jure*) population with the given characteristics, for example, five year age group X sex X ethnic group X labour force status X industry X occupation. Table 5.2.1 also gives the minor disaggregations of these variables. For all years 1976-1991, ethnic classification approximates the cultural affiliation definition employed at the 1991 census. That is to say, in retrospectively

[7] Nor are hours worked published by ethnicity, although some studies employing unpublished data do exist.

regrouping the database, Statistics New Zealand endeavoured to make ethnic classification consistent with the 'Ethnic Group' classification noted earlier. The process, which involved a hierarchical procedure for assigning multiple ethnic group responses to a single ethnic group, was originally 'developed with the aim of giving priority to non-Pakeha-European groups and special priority to Maori and Pacific Island groups' (Statistics New Zealand 1993:26), and ensures that for statistical purposes each respondent is counted only once. The procedure is:

- If New Zealand Maori is one of the groups reported, the person is assigned to New Zealand Maori;
- Otherwise, if any Pacific Island group is one of the groups reported, the person is assigned to the Pacific Island Group;
- Otherwise, if any group other than a European/Pakeha group is one of the groups reported, the person is assigned to 'Other';
- Otherwise, the person is assigned to European/Pakeha.

In order to derive an historical analysis from the forgoing data sources, the following approach is taken. Historical trends in both labour force and employment status are drawn from published data and pertain to the Sole/Single Origin Maori and non-Maori populations, with the caveat that in all but one instance (the overview of labour force participation rates *per se*) the data reflect a shift in ethnic classification between 1986-1991. As noted above, this shift is not considered to have a substantial impact on trends. A potentially greater impact obtains from the inclusion of part-time data in the published labour force status and employment status data from 1986, especially for females, although again the long-term trends in labour force participation *per se* given in Chapter 7 are free from this discontinuity. All such discontinuities are fully annotated at the base of each table and figure, and their implications discussed in the text at the appropriate junctures.

For the component and cohort analyses of labour force status, data are drawn from Database A. This shift means a concomitant shift to populations classified European and Maori Ethnic Group, and to the 'working age' population, those aged 15-64 years. This age group is preferred to that of the population aged 15+ years, because the analysis is partially concerned with the issue of dependency, typically measured in relation to the working age population *per se*, and not the proportion of the working age

population actually in employment. The only other discontinuity affecting trends is that pertaining to the shift from full-time only to full-time plus part-time *un*employment between 1981-1986. As noted, the effect is believed to be small.

The component and cohort analyses of employment status, on the other hand, require a return to published data, and thus to the discontinuities and caveats noted above.

5.2.3 Chapter 8 (Industry and Occupation):

Historical data for industry and occupation by ethnicity are affected by several of the same limitations and caveats as labour force and employment status (Morrison 1991:34). In addition, they are affected by changes in the classification of each industry and occupation. However, the analysis in Chapter 8 circumvents the problems in two ways. First, historical trends in industrial change are drawn from the work of Thompson (1985), whose time-series 1926-1981 is considered New Zealand's benchmark on the subject. Thompson's data are given for Sole/Single Origin Maori and non-Maori for the entire period, and pertain to the full-time labour force only. Similarly, historical trends in occupational change are drawn from the work of Brosnan (1987), whose time-series 1956-1986 provides a similar benchmark study, also pertaining to the Sole/Single Origin Maori and non-Maori full-time labour force populations, and within which changes in occupational classification have been accounted for by regrouping the data according to the criteria detailed by Brosnan.

These data are supplemented for the period 1976-1991 with those drawn from Database A, in which both industry and occupation have been regrouped by Statistics New Zealand to reflect the major (1-digit) occupational and industrial classifications employed at the 1986 census. The data are thus—as near as possible—internally consistent across the 1976-1991 period. Importantly, the resulting categories differ to those employed by both Thompson and Brosnan, and for that reason are treated separately. They are also the data on which the chapter's two component analyses (one each on industrial and occupational distribution) are carried out.

5.2.4 Chapter 9 (Educational Qualifications):

Questions on completed qualifications were relative late-comers to the census, asked for the first time in 1966. Data were also collected in 1971, and between 1981 and 1991 inclusive, but not in 1976. That is to say, in 1976 the census question asked about

current enrolment in a qualification, but not about completed qualifications (Morrison 1991:31). As a result, almost the entire analysis in Chapter 9 is based on the second specially derived census database compiled by Statistics New Zealand and detailed in Table 5.2.2.

The same procedures as above for regrouping by ethnicity and labour force status were followed, as were similar procedures for qualifications, with the result that the two databases are essentially continuous. That is to say, there is a considerable degree of continuity between all analyses based on Database A or B.

Table 5.2.2

DATABASE B (1981-1991)
Age (Five Year Age Group)
Sex (Male; Female)
Ethnic Group (European; Maori Ethnic Group; Pacific Island/Polynesian; 'Other', Not Specified)
Labour Force Status (Full-time 30+ hours; Part-time 1-29 hours; Unemployed; Not in the Labour Force; Not Specified)
Educational Qualifications (No Qualifications/Still at School; Secondary School Qualifications Only; Bachelors/Post Graduate Qualifications; Other Tertiary Qualifications; Qualifications Not Specified)
Income Band ($ New Zealand in Census year) **1981** (25 income bands): Nil or Loss; 1-249; 250-499; 500-999; 1,000-1,999; 2,000-3,499; 3,500-4,999; 5,000-6,499; 6,500-7,999; 8,000-9,999; 10,000-11,999; 12,000-13,999; 14,000-15,999; 16,000-17,999; 18,000-19,999; 20,000-22,499; 22,500-24,999; 25,000-27,499; 27,500-29,999; 30,000-34,999; 35,000-39,999; 40,000-49,999; 50,000-59,999; 60,000 and over; Income Not Specified. **1986** (17 income bands): Nil or Loss; 1-1,000; 1,001-2,500; 2,501-5,000; 5,001-7,500; 7,501-10,000; 10,001-12,500; 12,501-15,000; 15,001-17,500; 17501-20,000; 20,001-25,000; 25,001-30,000; 30,001-35,000; 35,001-40,000; 40,001-50,000; 50,001 and over; Income Not Specified. **1991** (14 income bands); Nil or Loss; 1-2,500; 2,501-5,000; 5,001-7500; 7501-10,000; 10.001-15,000; 15001-20,000; 20,001-25,000; 25,001-30,000; 30,001-40,000; 40,001-50,000; 50,001-70,000; 70,001 and over; Income Not Specified.

In terms of educational qualifications, the main shortcomings in the database concern the incremental broadening (or narrowing) of the criteria used to define each qualification category. Historically, for example, the 'other tertiary qualifications' category pertained primarily to teaching, technical and trade qualifications which took a number of years to complete. Increasingly it has covered a wide range of occupation-

specific qualifications, some of which involve training periods of weeks or months rather than years. The result is an ongoing increase in the size of the category, which cannot be linked to any particular qualification or policy change, and a subsequent decline in the 'no qualifications' and 'secondary school qualifications only' categories. Similarly, although clearly located in a policy change in 1986, the University Entrance qualification, awarded since 1944 via accreditation (or internal assessment) for a 50 per cent average over four subjects during the sixth form year (four years secondary schooling), was replaced by the Sixth Form Certificate and also became awarded for individual subjects. The shift simultaneously increased the numbers and proportions with a secondary school qualification, reduced the numbers and proportions with no qualifications, and increased the age at which students gain the qualifications that admit them to a tertiary institution (Carmichael 1996:37).

Historical trends, which as noted cover a very limited and dislocated period, are similarly affected by earlier changes in the criteria used to define the School Certificate qualification, a national examination typically sat after 3 years of secondary schooling, and until 1970 denoting a minimum of four subjects passed. From 1970 a pass in any subject gained the sitter a School Certificate in that subject.

A problem also exists with the categories under which the qualification data for 1966 and 1971 were published. In 1966, the categories were approximately the same as those given in Figure 5.2.2. In 1971, however, the 'other tertiary qualifications' data were given separately in one census table, and conflated amongst the three other categories in another. It was not possible to reconstruct the categories to match those for 1966. Accordingly, the indices of dissimilarity for those two observations cannot be viewed as true trends, a point discussed in the text at the appropriate juncture.

5.2.5 Chapter 10 (Income):

As with the labour force data described above, data on income by ethnicity were not collected until 1951. Although published by age in that year, this did not occur again for Maori incomes until 1976, meaning that few detailed time-series studies of ethnic differentials in income exist.

One other discontinuity of significance occurred between 1976 and 1981. This was a shift from census questions concerning total income *exclusive* of benefit income, to the inclusion of benefit income. That is to say, social security income was not classified as declarable income until the 1981 Census. Although the numbers receiving

benefit income *other* than the universal Family Benefit prior to 1981 were relatively small—in 1976 approximately 4.2 per cent of all persons aged 15-59 years (Martin 1977:4)—these factors undoubtedly differed by sex and ethnicity. For example, the Family Benefit was a universal payment based on number of dependent children, which at the time differed markedly between Maori and European (Jackson and Pool 1994, Chapter 8). The benefit was small in dollar terms ($6.00 per week for each child), but in 1976 amounted for each child to 4.3 per cent of the average weekly wage. The Family Benefit component of the income of a family with 3 children would therefore have equated to 13 per cent of the average weekly wage. Since this component was excluded from the 1976 data, it was decided not to use income data for that year in the component and cohort analyses of Chapter 10.

However, in order to provide an overview of historical trends, data which do incorporate the discontinuity are presented in Chapter 10, having been drawn from published sources. The remaining data used in Chapter 10 are drawn from Database B, income bands for which can be seen in Table 5.2.2 to have differed at each census year: 25 in 1981, to 17 in 1986, to 14 in 1991. The database records the number of persons in each band (by age, sex, ethnicity and the other variables given in Table 5.2.2), at the dollar value pertaining in each Census year. For the purposes of this thesis the data were adjusted to the Consumer Price Index (CPI), using 1991 as the base year (1991=1.00) and the multipliers 1.534 for 1986 and 2.689 for 1981 (Easton, personal communication). In order to construct income means, it was also necessary to determine upper boundaries and mid-points for the highest income bands. These mid-points were set at $90,000 for 1981 (a band interval of $60,000); $75,000 for 1986 (band interval $50,000); and $105,000 for 1991 (band interval $70,000) (Easton, personal communication).[8]

Because these data include benefit income, and thus have implications for the analysis of trends in Chapter 10, it is necessary to acknowledge significant changes to the payment structure over the 1981-1991 period.[9] These changes can be approximately divided into two groups. (1) Between the 1981 and 1986 censuses—and excluding the period June 1982-November 1984, when a wage-price freeze was in effect—the

[8] Brian Easton is a well known New Zealand economist.

[9] For the following data I am particularly indebted to Kay Goodger of the Social Policy Unit, New Zealand Department of Social Welfare.

unemployment (UB) and domestic purposes (DPB) benefits[10] underwent incremental increases not only in value, but also in eligibility. In October 1981, for example, eligibility for the UB was extended to those engaged in approved employment-related training programs. In November 1983 a similar Training Incentive Allowance was introduced for DPB recipients. In December 1984 the Child Supplement Payment (a benefit that had been introduced in 1973 to assist in the maintenance of the first child of a sole parent, and in 1984 worth $59 per week, or 21 per cent of the average weekly wage) was extended to children other than the first child, although at a lower rate of $6.00 per week; and a means-tested Family Care Benefit was introduced for workers whose earnings fell below a given threshold. By the 1986 Census the Child Supplement was worth $70 per week (or 20 per cent of the average weekly wage) for the first child and $10 per week per additional child (3 per cent of the average weekly wage). Over the 1981-1984 period, eligibility for National Superannuation remained essentially unchanged from its inception in 1977, when universal entitlement had been set at age 60, but in 1985 a 'National Superannuitant' surcharge of 25 cents for every dollar of other taxable income above a certain limit ($6,240 for individuals; $5,200 each for married couples) was introduced. This reduced the incomes of retirees on higher incomes, but had no effect for those whose incomes were derived solely from the pension. During the 1981-1986 period, all forms of income support were regularly adjusted by the CPI at 6-monthly intervals.

(2) During the period 1986-1991, eligibility for some benefits was first increased (although for some beneficiaries, especially sole parents, the changes meant a reduction in income) and then incrementally reduced, whilst toward the end of the period some general benefit cuts were also implemented.[11] In April 1986, for example, the Child Supplement, Family Care and other pre-existing family tax rebates were replaced by a more comprehensive means-tested Family Support programme, which applied to sole parents and low-wage earners alike. The change reduced the payment for first children to $36 per week (10.4 per cent of the average weekly wage) but increased payments for additional children to $16 per week (4.6 per cent of the average weekly wage). In

[10] The UB is paid only to those registered as unemployed and actively seeking full-time work. The DPB is essentially a carers benefit, paid to unsupported sole parents, and persons caring full-time for the disabled. However in certain circumstances it is also paid to unsupported single women without children.

[11] Further and considerably more repressive changes followed in April 1991, but because these occurred after the 1991 Census, the last observation for which data in Chapter 10 are analysed, they are not detailed here.

August 1986 an important change came with the equal apportionment of all social security and national superannuation payments. This shift meant that benefits for couples and families, which had previously been paid to one partner, usually the male, were from that date paid separately to each spouse. This change, which came into effect shortly after the 1986 Census, will have had the effect of lowering the 1991 Census incomes of affected male recipients, and increasing those of females, *vis-à-vis* their relative levels in 1986. In October 1986 all benefit rates were increased by 5 per cent to compensate for the introduction of GST (initially levied at 10 per cent), and the National Superannuitant surcharge rate was reduced from 25 to 18 cents in the dollar. In April 1987 income exempt from the National Superannuitant surcharge was increased (to $7,800 for individuals and $13,000 for couples), and the threshold at which Family Support could be applied for was increased.

In July 1988, however, no six-monthly CPI adjustment was made to any social security benefit. In April 1989, the basic benefit for sole parents with one child was increased by a smaller amount than for those with two or more children, although family support payments for second or subsequent children aged 16-17 years and still at school were more than doubled, from $16 to $32 per week, the latter move following a cut in unemployment benefit rates for 16-17 year olds in January 1989. In October 1989, the Family Support abatement threshold was increased, and, in April 1990, the benefit became payable to the principal carer (usually the mother), where previously it had been split between partners for couples with children. In August 1990, a requirement that sole parents receiving the DPB identify the other parent (introduced in 1981 for the purposes of the Liable Parent Contribution Scheme) or receive a lower benefit rate, was extended to those receiving benefits other than the DPB. In December 1990, the minimum age of eligibility for unemployment benefit was raised from 16 to 18 years, and in February 1991 (prior to the 1991 census), the telephone service rental allowance (a small subsidy introduced in 1989 to assist beneficiaries with the cost of maintaining a telephone) was abolished.

Benefit schedules indicate that income relativity between the various benefits was maintained throughout the 1981-1986 period. However, the changes will have had an effect on aggregate level incomes as a result of compositional differences in the population. For example, larger proportions of Maori than European have children, are sole parents, and/or are unemployed, and it is probable that the general improvements in benefit income over the 1981-1986 period increased the aggregate mean incomes of

Maori *vis-à-vis* European, whilst the opposite could be expected for the 1986-1991 period, especially in the year prior to the 1991 Census. Similarly, the shift to an individual-basis for payment of benefit incomes following the 1986 Census and again in 1990 will have deflated the 1991 incomes of unemployed and not-in-the-labour-force males, and inflated those of females, *vis-à-vis* their levels in 1986; whilst the restrictions in eligibility and ultimate removal of unemployment benefit for 16-17 year olds in 1990 will have reduced the 1991 Census incomes of 15-19 year old Maori, due to the somewhat higher proportions unemployed of Maori than European/non-Maori at these ages.

Clearly it is not possible to determine from the complexity of these changes, which particular factor(s) will have most affected the various income trends shown in Chapter 10. Indeed, yet another factor affecting incomes (and especially income relativities between Maori and European) was a substantial rise in the minimum wage in 1985, which both increased the incomes of low wage earners at the 1986 Census, and will have entered into the incomes of the unemployed and not-in-the-labour-force, due to the phenomenon of labour market churning (movement in and out of the various labour force statuses). Nevertheless, since it is necessary in that chapter to make some assumptions, the foregoing provides a basis.

Chapter 11 (Birth and Fortune):

Chapter 11 draws in part on population and fertility data from Chapter 6, on employment data from Chapter 7, and on income data from Chapter 10 (these data sources requiring no additional description); and in part on unpublished fertility data, hereafter referred to as Database C. Database C is comprised of single-year-of-age fertility data for the years 1981, 1986 and 1991 for the Maori and non-Maori populations, and was specially compiled for use in this thesis by (and as a result of extensive communications with) Statistics New Zealand, so as to approximately reflect the Maori Ethnic Group classification used at the 1991 Census.[12] In this endeavour, data for birth mothers classified as having *25 per cent* or more Maori blood were aggregated. Whether or not this somewhat arbitrary demarcation line reflects the self-perceptions of those involved, it is impossible to say. In justification of the decision it is argued that at the 1991 Census, the population that defined itself as affiliating with the Maori Ethnic

[12] I am especially indebted to Ian Richards of Statistics New Zealand, who spent considerable time and effort discussing the various issues with me by fax.

Group comprised 85 per cent of the population that acknowledged Maori Ancestry *per se*. This is somewhat larger than the 63 per cent who claimed (or were classified) Sole Maori origin, the previous criterion for defining a 'Maori' birth.[13] The framework assumes, therefore, that approximately 15 per cent of parents with some degree of Maori Ancestry claim to have (or are classified by others as having) less than 25 per cent Maori blood.

For the purpose of establishing shifts in the timing of family formation, one of the main issues of interest in Chapter 11, it is preferable to use single-year-of-age fertility data. However, because Database C covers a relatively brief time-frame (1981-1991), it is not possible to establish long term trends. Accordingly, these data are used where appropriate, whilst longer term trends are drawn from published material.

5.3 TOWARDS ANALYSIS

Together these databases contain a comprehensive profile of ethnic stratification in New Zealand. They also, however, generate an enormous amount of empirical material—an intended, if somewhat cumbersome, contribution of the thesis. In order to permit the text to flow as freely as possible, raw data and background tables are consigned to the appendices, whilst their contents are illustrated graphically within the text. Importantly, it should also be recalled from Chapter 1 that the various discontinuities outlined above are a central *feature* of the substantive chapters, in that part of the contribution of this thesis is the compilation of a comprehensive database under one cover, and its explication, not only for the purposes of validity, but also for the elucidation of those who may later use or extend that database.

[13] As noted at the outset of this chapter, the 1991 census recorded the Maori Ancestry, Maori Ethnic Group and Sole/Single Maori Origin populations as numbering, respectively, 511,278; 434,844; and 323,493.

PART 2

FROM THEORY TO PRAXIS

6

HISTORICAL OVERVIEW: FROM TREATY TO RETREAT TO RE-ENTRY

6.0 INTRODUCTION

No analysis of ethnic stratification in New Zealand can begin without first acknowledging the processes of European colonisation, begun in earnest with the Treaty of Waitangi in 1840 and facilitated through a series of legislative acts over the remainder of the nineteenth century, and into the early years of the twentieth. Indeed there can be little controversy over the argument that these processes systematically dispossessed Maori of their economic base and relegated them, *en masse*, to a subordinate socio-economic, demographic and political position *vis-à-vis* most of the European population. Accordingly, this chapter provides first a condensed history of the early development of ethnic stratification in New Zealand, covering the period 1840-1940, during which time Maori briefly—and very successfully—interacted with the incoming capitalist economy, but then, from the 1860s to the 1930s, politically betrayed and physically overwhelmed, they withdrew to their rural hinterlands. Central to the discussion is consideration of the development of demographic differentials between the two populations. Finally, the re-entry of Maori into the capitalist system—beginning with mass urbanisation in the 1940s and 1950s—is located in an age-structural context.

Importantly, it should be kept in mind that this thesis is not about re-substantiating the existence of ethnic stratification in New Zealand, but about expanding the parameters by which the phenomenon is understood. In this sense it sees demographic differentials as both dependent and independent variables of inequality. It should also be noted that underlying all matters discussed here, significant regional and tribal differences exist. Although these differences are undoubtedly of importance to the study, they are beyond the scope of the thesis.

6.1 THE FIRST HUNDRED YEARS: BETRAYAL AND WITHDRAWAL

Whatever the social, economic and demographic situation of pre-contact Maori (Firth 1959; Pool 1977, Chapter 3; Sutton 1986; Davidson 1984, 1992), and despite an intensifying decline in numbers brought about by contact with European diseases against which Maori had no immunity (Crosby 1986:232, 268; Pool 1991a:44-46), one point about the early years of colonisation must be particularly stressed. Between annexation in 1840 and the late 1850s the different *hapu* and *iwi* which collectively comprise the Maori population were, on the whole, highly entrepreneurial and prosperous. Outnumbering Europeans by approximately 40 to 1 in 1840, numerous historical accounts record the rapid adaptability, enthusiasm and innovation with which Maori met the market economy (Sutch 1942:33-34; Firth 1959:450; Pearson and Thorns 1983:197-8; Royal Commission on Social Policy [RCSP] 1988b:5-6; Minsterial Advisory Committee 1986, Appendix 1:10; Pearson 1988:168; Temm 1989:6-7; New Zealand Law Society 1989; Penetito 1991). Traders, whalers, and, in the mid-1840s, settlers left poverty-stricken by the mismanagement of the New Zealand Company (Sutch 1942:23), were all heavily dependent upon Maori for resources. By the 1850s Maori tribes not only produced and supplied most of the food requirements of the settlement of Auckland, but also exported foodstuffs to Australia and throughout the Pacific. Furthermore, they transported this produce in a substantial fleet of Maori-owned coastal and trans-Tasman shipping vessels. An example of the Maori commercial base is evident from the following Minsterial Advisory Committee (1986:10) report:

> By the 1850s Maori tribes owned and operated most of the coastal shipping of the North Island. By 1858 there were 53 Maori vessels of more than 14 tons registered in Auckland alone... In 1857 the Bay of Plenty, Taupo and Rotorua tribes numbering about 8000 people had several thousand acres in wheat, potatoes, maize and kumera. They owned nearly 1000 horses, 200 head of cattle, 5000 pigs, 4 water-powered mills and 96 ploughs. On top of this they owned 43 coastal vessels of around 20 tons each and more than 900 canoes.[1]

Importantly, much of this wealth accrued to Maori as the result of the articulation of kin-based principles of social and economic organisation with the settler market economy. For example, Maori held no concept of land ownership in the

[1] Similarly the Waikato tribes in 1853 had ten flour mills in operation, others under construction (Metge 1976:32), extensive wheat, maize and potato fields, and numerous horses and cattle (Temm 1989:5).

European sense. Rather, they saw themselves as 'belonging to the land where their feet stood'—that is, to their *turangawaewae*, the tribal land of their ancestors (Metge 1976:109)—and subscribed instead to notions of tribal jurisdiction over these areas, and to communal use-rights and labour obligations therein (Metge 1976:1-15).[2] Subsequently, the wealth resulting from these communal efforts was also tribally 'owned'. A number of commentators have argued that more than anything else it was these communal principles that were antithetical to the establishment of a fully functioning capitalist society on New Zealand soil, and which, under the rhetoric of 'beastly communism', were marked for destruction (Minsterial Advisory Committee 1986:5-7; Oliver 1988:4-5).

An accurate account of the alienation of Maori land and its transference to the European settler economy is made difficult because the various sources that record the information are often contradictory (Condliffe 1959:116). Furthermore, official statistics do not show the details of annual land sales until 1856. Nevertheless, it is well documented that the processes of land alienation centrally concerned the State (including its Statesmen, who were among the largest benefactors—Condliffe 1930:103, 120; Sutch 1942:25; Dalziel 1992:107), that its endeavours were for the most part in direct contradiction to the principles of the Treaty (see Appendix D.1), and that central to both were the speculative ventures of the New Zealand Company founded prior to annexation by Edwin Gibbon Wakefield. The Company, established for the dual purpose of buying up Maori land and selling it on at a profit, and settling New Zealand according to the systematic principles of the Wakefield Plan whereby 'a proper balance would be achieved between land [its price determined so as to restrict its purchase to capitalists], capital and labour' (Gardner 1992:59), began, ostensibly, with a mixture of social and economic objectives.[3] For the State, however, first came the tasks of expunging native title and securing the land, then disposing of and financially assisting with the development of that land. Both tasks were achieved via a series of legislative acts and

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[2] Every inch of pre-contact New Zealand was subdivided into distinct regions with defined borders, and these regions were occupied by individual tribes (Sinclair 1992a:66-69). Customary title to the land was determined by right of descent involving knowledge of complex genealogical and occupational histories, complemented by active occupation. Land could be won or lost in battle, but the rights to that land could be obtained only through active secure occupation.

[3] The New Zealand Company grew out of an earlier 'New Zealand Association', formed in 1837 with a mixture of philanthropic and economic objectives. Supposedly uppermost amongst these was the opportunity for British subjects to escape the negative social conditions existing in Britain at the time. However, by 1838 the Company was selling land before it had even been purchased, many of the idealistic philanthropists withdrew, and the economic principles took over (Sinclair 1992a:71-72, see also Appendix D.2).

policies that were, for the most part, explicitly racist. Too numerous to be elaborated here, the main innovations and their objectives, along with some of the earlier legislation that was designed, ostensibly, to protect Maori, are listed and discussed at more length in Appendix D.2.

Despite increasing resistance on the part of Maori to sell, the process of land alienation was highly efficient. By 1856, sixteen years after the signing of the Treaty, Maori retained considerably less than one half of their original 66 million acres. The whole of the South Island and more than 6 million acres of the North Island had passed into European hands (Sutch 1942:33). By 1860, Maori retained only one third of their original holding. In that year frustrations on both sides erupted. Large-scale fighting broke out between the settlers (supported by the military) and Maori in the Taranaki area of the North Island. Finally, in 1863, in an endeavour to put down the 'uppity natives' further north in the Waikato, Governor George Grey ordered a military invasion and started the Land Wars (Temm 1989:8). Not content with the resulting disproportionately high loss of Maori lives, nor the fact that the wars were in deliberate violation of Article II of the Treaty, confiscation of large tracts of land from so-called 'rebellious tribes' followed. So too did the Native Land Court and the revamped Native Lands Act (1865), with their combined objectives of furthering the conversion of Maori land to individual title and the simultaneous requirement that Maori agreeing to sell must now prove ownership of their traditional lands, a change which involved prohibitive survey and legal costs. Not only did such moves foster both intra- and inter-tribal dissension and conflict (Sorrenson 1956:81, 1992:153; Sinclair 1957:110-225), but, drawn into debt in order to prove ownership, the land was often impounded to discharge that debt (Metge 1976:35).

By the mid-1860s, increasingly landless, deprived of assets accumulated in the pre-war period, and psychologically distressed, the Maori population retreated to their rural hinterlands, away from contact with Europeans and from any significant involvement with the market system (Sutch 1969:68; Bedggood 1980:50,81; Parsonson 1981:161; Preston 1985:59; Pool 1991a). Where, in the early years of colonisation, relatively high levels of material well-being—including higher levels of literacy than in the settler population—had existed amongst Maori, now poverty, sickness and death became rampant. Despite a rise in estimated fertility, which Pool (1991a:77-81) attributes to either a natural decline in the virulence of venereal diseases initially introduced by European crews and settlers; and/or a change in the proximate

determinants of fertility (marriage patterns, breastfeeding periods, postpartum sexual mores—undoubtedly reflecting disorganisation of previous social controls - e.g. Metge 1976:29-21),[4] Maori numbers fell both absolutely and relatively, from around 70,000-90,000 in 1840 (Pool 1991a:55), to around 42,000 in 1896, by which time they comprised less than 6 per cent of the total population and retained less than one sixth of their original land holding (see also Sorrenson 1963:21). Table 6.1.1 gives an indication of the velocity and broader implications of this change.

Table 6.1.1
Population Change, Maori and Non-Maori/European, 1840-1896

	Numbers		Annual Change (%)		Per cent Distribution	
Year	Maori	Non-Maori	Maori	Non-Maori	Maori	Non-Maori
1840*	70-90000	c. 2000	...	...	97+	<3
1858	56049	59413	...	...	48.54	51.46
1874	47330	297654	-1.1	11.2	13.72	86.28
1878	45542	412465	-1.0	8.5	9.94	90.06
1881	46141	487889	0.4	5.6	8.64	91.36
1886	43927	576524	-1.0	3.4	7.08	92.92
1891	44177	624474	0.1	2.7	6.61	93.39
1896	42113	701101	-1.0	2.3	5.67	94.33

Notes: * Pool 1991:55
Source: Papps 1985, Tables 9 and 10.

The discrepancy between rising birth numbers and falling population numbers was, of course, accounted for by a fall in life expectancy (e_0°), which at the time of annexation had been around 28-30 years and compared quite favourably with that of the settler population. Between the 1850s and the 1880s it declined to and sat at little more than 20 years (estimated by Pool 1985:230, 1991a:77). From there, due in part to increasing immunological experience, it gradually edged up, but ended the century at only 30 years, around half that of the European, and implying a Maori infant mortality rate at least three times that of the European rate. Importantly, as Pool argues, it was not the absolute level of Maori e_0° that was so appalling, being in fact higher at the time than for some parts of Europe, but its level *vis-à-vis* that of the settler population with whom Maori had by then co-resided for more than half a century, and to whom the Treaty of Waitangi had guaranteed 'all the Rights and Privileges of British citizens'. As Pool (1991a:59-103) aptly describes the period, these were indeed 'decades of despair'.

[4] Importantly, these and other data predating 1913 for Maori fertility and 1920 for Maori mortality indices reflect back-projections computed by Pool (1967, 1977, 1991a). According to Pool, all data are somewhat unreliable until approximately 1936.

Nevertheless, the combination of rising fertility and rising e_0° right at the end of the period saw—at least in some regions—the beginnings of a sustained increase in Maori numbers (Pool 1991a:101). Two important and seemingly paradoxical factors that would come to play an important role in the following decades must also be acknowledged. The first was the response of the State to the strong desire and considerable efforts by Maori to avail themselves of formal education (Fitzgerald 1970; Barrington 1971; Bridges 1971; Ramsay 1972; McKenzie 1982). As noted above, the beginning of the period had seen a disproportionately large sector of the Maori population literate, a factor due almost entirely to the pre-colonisation activities of the mission schools, but also continued after annexation by partial state funding.[5] Between 1867 and the end of the century educational opportunities for Maori were further extended with the passing of the Native Schools Act, the transference in 1869 of Maori mission schools to the newly created Department of Education—making primary schooling free and universal for Maori, and following the precedent set for European children just two years earlier—and the Native Schools Code, which in 1880 finally exposed Maori children to the normal British primary school curriculum. Around 1880 the first scholarships also became available for Maori to attend post-primary education, and the very significant Te Atue College began to prepare the first Maori for entry into tertiary education. However, as Sutch (1969:68) and Metge (1976:35) caution, the objective of much of this legislation was not so much the *education* of Maori as their Europeanisation or assimilation. Indeed, others have also argued that the Maori scholars of this era were really being prepared to act as cultural brokers. Certainly some of the first graduates 'adapted their politics to Pakeha politics and accepted the conditions that were imposed upon them as the price for becoming a part of the Pakeha system' (Minsterial Advisory Committee 1986:9). These words clearly resonate with Hechter's (1976:41) arguments put forward in Chapter 2.

The second ostensibly paradoxical factor was the establishment in 1867 of Maori representation in Parliament. However, in terms of population numbers at the time (approximately 50,000 Maori; 250,000 European) the four Maori and seventy-two European seats so established meant there was little about the move that was truly representative (Royal Commission on Social Policy 1988b:7). Indeed, ten years later,

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[5] In the mid-nineteenth century the 'education system' such as it was used Maori as the language of instruction, resulting in more Maori being literate in their own language than settlers in theirs (Spoonley 1988:8). From 1867, however, English became the main language of instruction, and increasingly Maori pupils were forbidden to speak Maori at school.

arguing that there had been no Maori capable of ceding sovereignty in 1840, Chief Justice Prendergast was able to declare the Treaty null and void (Wi Parata v. The Bishop of Wellington 1877, 3 NZLR 72; Temm 1989:9), clearing the way for the transfer of any remaining Maori land (at the time approximately 15 million acres), and ultimately Maori labour, into the market economy. Overruled in 1901 by the Judicial Committee of the Privy Council (following petition by Maori), the government promptly passed the Land Titles Protection Act (1902), nullifying the Privy Council finding and effectively quashing Maori objections (Temm 1989:11). This is not to say that Maori voices were silenced. Indeed, throughout this period (as to the present day) Maori chiefs and elders actively protested the loss of their land and the betrayal of the Treaty. In addition, suffrage in 1892 had been extended to Maori and European alike. However, by then representing around six per cent of the population and this proportion still declining, Maori voices remained largely ignored.

A third factor—whilst not exactly paradoxical in nature—also deserves mention. The cash economy in place over these years meant that Maori as well as European were forced to pay cash for the farming needs and other expenditure they incurred where they had previously been able to barter. As a result, whilst Maori subsisted on whatever land they retained, they supplemented this existence with occasional wages as labourers on farms, road and port construction (Bedggood 1980:30; Thompson 1985:24). They also borrowed European farming tools and techniques, adapting them to the framework of communal life (Metge 1976:34). As Metge argues, these practices not only assisted in preserving the integrity of Maori land and social order, but were implicated in arresting the fall in Maori numbers.

For European, on the other hand, and despite the widespread poverty associated with the Wakefield plan in the early years of settlement and the long depression of 1865-95 (Sutch 1942:20-23, 55-74, 1968:3-34), the period between annexation and the end of the century was, overall, one of slowly consolidating pastoral and export-related wealth. This is not to say that the wealth was universally shared. Indeed, access to land, resources and jobs were never equally distributed amongst the settler population, and whilst the Maori population had moved *en masse* from communality to marginality over the period (Pearson 1988), a class structure had developed simultaneously amongst the settler population (Sutch 1942:vi, 1966). As Sutch succinctly states:

> From the very beginning New Zealand had more people dependent for a livelihood on selling their labour than were independent working farmers, or

> farmer-employees .... inequalities of income, insecurity, unemployment, and poverty are the inevitable concomitants, so much so that the results become the main problem of the country.

Certainly in the 1890s, two-thirds of the labour force were either wage earners (59 per cent) or unemployed (Thompson 1985:130). However, as is shown in Chapter 7, this was lower than the proportion of the labour force that would be wage earners at any time during the following twentieth century. Moreover, as a proxy indicator of general material well-being, European life expectancy (e_0°) at the end of the century was the highest in the world, and was, as noted above, now higher than the Maori e_0° by approximately 30 years. Simultaneously, European fertility—which, at a Total Fertility Rate (TFR) of 6.7 in the 1870s had been higher than that for Maori (Gibson 1971, cited in Pool and Sceats 1985; Pool 1991a:64)—was falling rapidly, and whatever the cause of this decline (Pool and Tiong 1991),[6] one important result was a further lessening of the sibling cross-infection, malnutrition (arising from too many mouths to feed) and maternal health problems that had previously led to high levels of infant mortality (Pool 1985:153). In addition, along with the combined processes of pioneer settlement, the availability of cheap land, and government support for its acquisition and development, a pervasive ideology of self advancement had arisen, whereby New Zealand was seen as a 'glorious country for a working man' (sic). Failure to achieve was thus strongly equated with lack of effort, a factor which, in combination with an ideology that cast the so-called 'Maori Wars' as deriving from Maori aggression (Spoonley 1988:10), saw Maori as the cause of their own plight.

Despite the fact that the following years 1900-1940 ended with a dramatic improvement in Maori health and living standards, most of the period is viewed by analysts as one of sustained marginalisation and/or semi-independence from European. On the one hand, government policies increasingly endeavoured to assimilate—or integrate—Maori into the economic, political, health and cultural systems of the European; on the other hand it regulated that participation and emphasised that Maori

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[6] Pool and Tiong primarily ascribe the fall to a massive decline in fertility at the younger ages. This may have reflected an economically-driven fall in the marriage rate as suggested by Sutch (1968:30-31), who demonstrates a strong positive correlation between falling product prices and rate of marriage. Certainly Pool and Tiong's regionally-disaggregated analysis, which was not able to eliminate nuptiality effects, identifies that the velocity of fertility decline was marginally greater during the depression years. It was also more pronounced in the urban areas—the wealthier landholders possibly being less affected. However, Pool and Tiong also demonstrate that the fertility decline continued its downward trend more or less unperturbed until the 1930s, suggesting that other factors, such as schooling-related changes in the economic value of children, were also involved.

incorporation was on European terms (Minsterial Advisory Committee 1986:9). For example, where Maori tried commercial farming on whatever land was left, its poor quality, combined with a relative lack of capital, technical skills, marketing expertise, legal advice and government support, doomed it to failure. Not until the 1920s were Maori Land Boards permitted to loan money—money that had accrued from rental for Crown use of Maori land—to Maori farmers (Sutch 1969:194; Minsterial Advisory Committee 1986:13), and not until 1929 were State Advances—subsidised financial assistance made available by the State to European farmers—also extended to the Maori population, who, despite the wholesale destruction of the kinship mode of production and the tribal relationships that went with it, were viewed as being able to subsist indefinitely in their traditional communal fashion (Macrae 1975:144).

Nor was access to the industrial structure or the education that might have assisted in reducing ethnic differentials equal. In 1926, when approximately 14,440 Maori were enumerated as having some form of employment (a crude activity rate of 35 per cent for males, 9 per cent for females; compared to 65 and 17 per cent respectively for non-Maori males and females),[7] Maori males were more than twice as likely as their non-Maori counterparts to be in primary industry, half as likely to be in secondary industry, and one quarter as likely to be in tertiary industry (Thompson 1985:127). Similarly, Maori females were seven times more likely than non-Maori females to be in primary industry, ninety-five per cent less likely to be in secondary industry, and three times less likely to be in tertiary industry. Undoubtedly these differentials reflected the existence of two articulating economies (Bedggood 1979; Thompson 1985:124) rather than the widespread participation of Maori in the capitalist economy. However, even when these differentials began to decline between 1926 and 1936—the proportion of Maori males in secondary industry, for example, almost doubled—the improvements reflected little assistance from the education system. As late as 1932, the National Expenditure Commission recommended that all secondary school scholarships to Maori be abolished, resulting in the government cutting two year scholarships by a quarter and discontinuing third year scholarships (Sutch 1969:310). In 1935, following arguments that the only future for Maori was one based on the land, the school curriculum further entrenched this attitude, continuing to offer Maori pupils training in unskilled and

[7] Maori labour force data were not collected until 1951. These rates have been computed by applying data from Zodgekar 1985, Tables 241 and 242, p. 98 to census population numbers given in Appendix D.3.

domestic vocations only. In any case, a general absence of secondary schools in the main areas of Maori population until the 1940s meant that few Maori pupils could, until that point, take their education beyond primary level.

The period also saw increasing institutionalisation of Maori with a further series of 'Native' institutions being either established or having their earlier functions altered (Minsterial Advisory Committee 1986:9). Of particular importance amongst the latter was the Native Land Court and its associated Acts, the workings of which continued over this period to separate Maori from their land, and to subject to specific usage and conditions of sale, any land that remained in Maori title (Condliffe 1959:76-77). For example, both the Public Works Act of 1908 and the Native Land Act of 1909 authorised the taking of Maori land without having either to give notice (continued in the case of the Public Works Act until 1974) nor to pay compensation (Temm 1989:11). Condliffe's (1959:76-77) account of the historical role of the Land Court is particularly illuminating:

> ..the Native (now Maori) Land Court was created as a permanent tribunal charged with the investigation and settlement of native land titles ... One of the chief purposes of its creation was to secure sound titles for land which had been or would be bought. In quieting titles and apportioning the purchase moneys equitably between the Maori owners it has been invaluable. Throughout its history, however, it has been a means of facilitating the separation of Maori from their land as equitably and painlessly as possible. In this way it has been the chief mechanism in the breaking up of the Maori economy and the destruction of tribal organisation and discipline.

Early in the same period, however, two important pieces of legislation that appear to have had a favourable impact on the health and overall potential for future material well-being of the Maori population were also passed: the Public Health Act and Maori Councils Act (both 1900). Together with the considerable efforts of the first Maori physicians (Sutch 1969:187-193) and the public health nurse movement, a few of whom were Maori, the primary health care campaigns that resulted from this legislation saw considerable improvements for Maori in the areas of sanitation and hygiene (Pool 1991a:119).[8] A widespread program of vaccination was also begun.

In the 1920s these measures were stepped up, due in large part to an increase in European sympathy for the Maori situation (Sutch 1969:192). A number of factors were

[8] It is worth noting, of course, that many of these problems had come about from Maori being forced to live in crowded conditions on small tracts of low lying and swampy land.

involved in this change of heart. One was the voluntary participation and legendary efforts of Maori in World War I, which engendered considerable respect and an element of obligation by those who had previously little to do with their Maori counterparts. Another was recognition of the shocking number of Maori deaths from the 1918 influenza epidemic, a rate perhaps ten times as great as that for European (Rice 1988, Table 6.1; Pool 1991a:117-118). Indeed, recognition by the 1920s that the Maori population was still declining proportionately—by then down to its nadir of 4.5 per cent of the total population, may also have been instrumental. Conversely, and somewhat ironically, was the growing realisation that since Maori no longer held sufficient land for survival, they were in danger of either urbanising and competing with Europeans for jobs, or becoming a charge on the State (Sutch 1969:193).

The resulting innovations, one of which was the first releasing of monies for Maori land development noted above, in no way bridged the gap between Maori and European standards of health and living. Indeed, during the Depression of the 1930s employment on public work schemes was at first denied to Maori, seeing many casual workers return to their remaining tribal lands (Thompson 1985:124) and exacerbate the situation there. It was not until the policies of the first Labour government in 1935 that the position of Maori really began to change (Sutch 1969:308). However, together the various events and circumstances did nevertheless result in an overall rise in Maori female e_0° from 30 years in 1900 to approximately 47 years by 1940 (Pool 1991a:114). This was accompanied by a further increase in the estimated TFR from around 5.9 to 6.9 (Pool 1991a:112), resulting, by the end of the period, in a doubling of Maori numbers. Thus, although the period can rightly be described as one of marginalisation, it was also one of 'recuperation in isolation' (Pool 1991a:104-129, see also King 1992:286).[9]

Somewhat conversely—and although Europeans remained considerably well ahead of Maori, the years 1900 to 1940 saw, overall, a marked slowdown in the rate of European population growth and material well-being. A number of factors were involved, uppermost of which were participation in the first world war and now entry into the second; the influenza epidemic of 1918; changes in farming technology which had significantly reduced rural employment; a major depression in the 1930s; and the years between the wars being described by Sutch (1968:37-45) as an inter-war

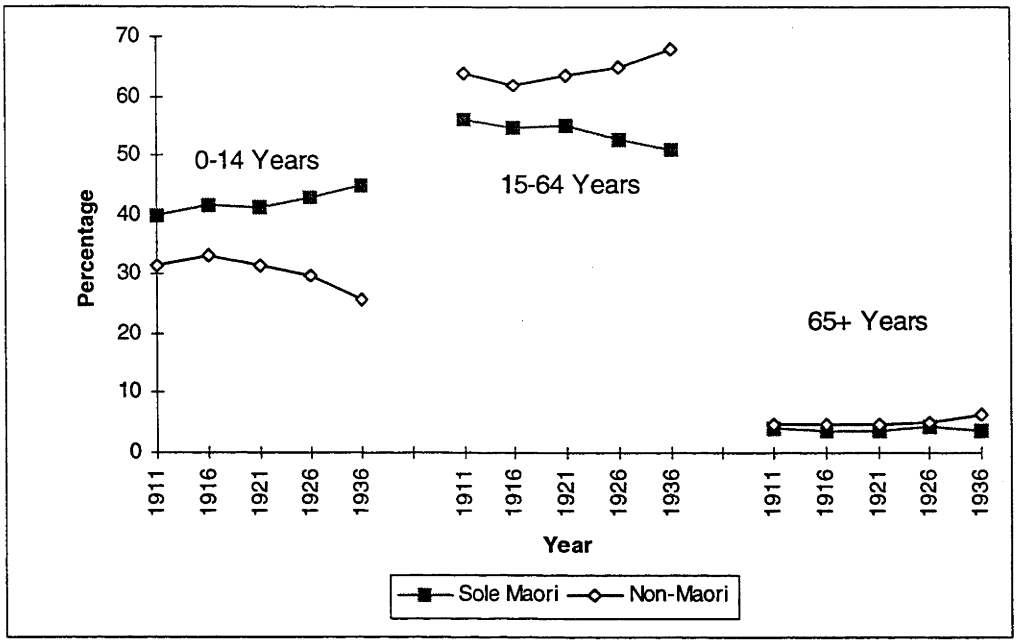
[9] It should be noted, however, that the mortality associated with the influenza epidemic of 1918 had subsequent effects on fertility, in turn causing a reduction in the rate of population growth for the years immediately following.

depression. Fertility had continued to fall almost monotonically throughout the period (Khawaja 1985:154-55), in 1935 reaching an all-time low of 2.05 and reducing the annual rate of natural increase—which in the 1870s had overtaken migration as the largest source of population growth—to around 1 per cent. Between 1932 and 1935—as had also occurred during the worst years of the earlier depression—net migration turned negative, showing an overall loss of almost 10,000 persons. Frustration with high unemployment and falling living standards saw the first Labour government (1935) elected on a platform of social and economic reform, leading, in 1938, to the establishment of New Zealand's welfare state.

Nevertheless, *vis-à-vis* Maori, life for the primarily European-origin population remained relatively good. Until the 1920s, Maori land was still being alienated to European at an average rate of 250,000 acres per annum, advantaging both European farmers and their supporting industries. Industrialisation—relatively slow to become established in New Zealand—was now seriously challenging the pastoral-based economy (Easton 1996a:11), producing opportunities for displaced rural workers in the secondary and tertiary industries. Non-Maori—predominantly European—life expectancy continued to rise, from 60 years for females at the turn of the century, to 69 years by 1941 (Pool 1985:219). Certainly the falling fertility of the period may have reflected the negative socio-economic circumstances of the period. However, since it also coincided with an overall increase in the proportions of successive birth cohorts ever-marrying, along with a steady fall in the cohort mean age at marriage (O'Neill 1985:195, 203; Jackson and Pool 1994:26), there is evidence that whatever socio-economic factors were affecting period fertility they were not restricting the ability of couples to marry. Furthermore, completed cohort fertility rates had in fact begun rising prior to the Depression, whilst by 1940 the TFR had recovered to 2.6, largely as a result of falling age at both childbearing (Khawaja 1985:155-9) and marriage.

Ignoring for now the effects of migration (which primarily affected European population), Figure 6.1.1 summarises the overall effects of these different fertility and mortality regimes as reflected in the age structures of the Sole Maori (50 per cent or more Maori blood) and non-Maori (predominantly European) populations across the period 1911-1936. Most obvious are the completely different directions in which the two age-structures moved, that for Maori becoming considerably younger, and that for non-Maori, considerably older.

Figure 6.1.1
Broad Age Groups as Percentage of Total Population, Sole Maori and Non-Maori, 1911-1936



Source: *Census of Population and Dwellings*, various years (see Appendix D.3)

Importantly, the patterns reflect an almost monotonic continuation in trends that had begun in the previous century, or perhaps even earlier. Between 1857 and 1901, for example, the proportion of the Maori population aged 0-14 years had increased from around 27 per cent for males and 29 per cent for females, to 36 per cent for males and 38 per cent for females (Pool 1991a:102). Conversely, for European, the proportion in the same age-group had decreased, from a high of 42.4 per cent in 1878, to 31.5 per cent by 1906 (Neville 1985:37). The suggestion that these inverse trends may have begun even earlier lies in the fact that from the time of Cook's first voyage (1769), the immunologically-virgin Maori population experienced demographic shocks[10] that had produced a mature age structure (Pool 1991a:29-58),[11] a phenomenon still evident at the end of the nineteenth century when approximately 10 per cent of the Maori male population and 8 per cent of the female population were over the age of 60 (Pool 1991a:102). By contrast—and although the age structure of the European population

[10] As implied above, these shocks involved an increase in disease-related mortality and a fall in fertility, the latter due to high levels of pathological sterility from venereal diseases brought by Cook's sailors.

[11] Pool (1977, 1991a:29-58) estimates that at the time of European contact Maori birth rates would have been in the range of 38-40 per 1000, death rates around 30-35 per 1000, and e_0° around 28-30 years. Applying back-projection methodologies to a range of potential contact population sizes, he argues that approximately these levels would have been necessary for the population to have increased from its size at the time of first arrival, sometime between 500 and 1000 AD. By the early 1840s birth rates had fallen to the vicinity of 30 per 1000 (4-5 births per woman), death rates had risen to a much as 45 per 1000, and e_0° was somewhat less than 28 years.

reflected its largely migrant composition, making comparison valid only in contextual terms—the proportion of the European population over the age of 65 in 1874 was a mere 1.2 per cent (Neville 1985:37). From that point these proportions changed. By 1911, the proportion of European over the age of 65 had more than doubled, to 4.7 per cent, whilst for Maori the proportion over the age of 60 had fallen for males by more than one-third, and for females by almost one-third, to 6.4 and 5.6 per cent respectively.[12]

There can be little argument that the demographic changes experienced by Maori between contact and the late 1930s were interlocked with those of European (Pool 1991a:4)—a point returned to below. This is not to say that European contact was the only cause of Maori demographic change—clearly other factors such as marginal food supplies and protein availability in the period prior to contact and/or colonisation would also have been implicated (Sutton 1986). However, as outlined above, the early years of colonisation were years of prosperity for many Maori, and thus any subsequent deterioration in Maori health and material well-being, along with changes to the social structure around which Maori family formation was organised, must be largely ascribed to the changing political-economic and demographic balance of the post-annexation period; so too the age which these changes produced.

6.2 REVIVAL AND TRANSITION

The situation of Maori over the period since 1940 reflects a dramatically altered involvement with the European social and economic system, brought about largely by the advent of the second world war and the subsequent post war economy. The changes spread simultaneously across three main fronts: urbanisation, formal labour force participation, and incorporation into the workings of the welfare state—in particular, to improved health and education services.

A general perception exists that Maori were encouraged to urbanise at the behest of the government (Spoonley 1985:14). Certainly the velocity of the change, shown in Table 6.2.1 and argued to be amongst the most rapid for a minority group anywhere (Gibson 1973:71-82), reflects a concerted effort, even when the effects of natural increase are discounted. However, others (e.g. Ministerial Advisory Committee 1986:15-17) have argued that the shift was never an organised exodus planned and

[12] Data are not available for the exact same age groups until 1911.

directed by the government or by any other agency. Rather, it was an aggregate result of Maori initiative, created by opportunities for unskilled urban employment amidst the growing shortage of labour associated with the second world war and the post-war economy. Moreover, as entry into the war-time industry gathered momentum, responsibility for the massive task of organising, housing, training and attending to Maori welfare needs was handed over to and effectively carried out by Maori themselves. This exercise, which resulted in the establishment and semi-autonomous networking of 356 tribal and executive committees, was viewed over those years by both Maori and the State alike as a means of finally breaking the nexus of Maori inequality (Ministerial Advisory Committee 1986:16-17).

Table 6.2.1
Total and Maori Urbanisation (Percentage), Intercensal Increase in Urbanisation for Maori, and Percentage of Intercensal Increase for Maori due to Natural Increase and Migration, 1926-1991

	Per Cent Urban		Intercensal Increase for Maori^	Per Cent of Intercensal Increase for Maori^ due to:	
	Total*	Maori^		Natural Increase	Migration
1926	...	15.6	11.7	...	...
1930	62.8	...	...	...	...
1936	...	17.3	29.3	68.1	31.9
1940	61.7	...	...	...	...
1945	...	25.7	...	23.1	76.9
1951	68.1	29.0	17.2	48.1	51.9
1956	...	35.0	18.6	45.2	54.8
1961	75.2	46.0	21.8	36.0	64.0
1966	...	61.6	20.4	30.5	69.5
1971	78.1	74.6	13.1	41.9	58.1
1976	83.0	76.2	18.7	60.1	39.9
1981	83.6	80.0	...	...	...
1986	83.8	79.0	...	...	...
1991	88.4	81.7	...	...	...

Notes: *1930-1976: Adminstrative units of 1000 persons or more;
*1981-1991:24 Main Urban Centres.
^1926-1991: 24 Main Urban Centres.

Source: 1926-1976, Watson 1985, Tables 59, 60 and 61
1981-1991, Compiled from *Census of Population and Dwellings.*

Importantly, these comments should not be interpreted as implying that Maori gained ground whilst their European counterparts were away at war. As with the first world war, the legendary efforts of the first Maori battalions were again followed by disproportionately heavy voluntary enlistment. As previously, this factor engendered a great deal of respect and increasing sentiments of obligation by European New

Zealanders. However, by 1945, with more than one quarter of Maori urbanised (compared with two-thirds of the total population), the return of peace saw an almost immediate return to old attitudes and to the doctrine of European paternalism. A parliamentary bill prepared by key Maori protagonists with the intention of converting the established network of tribal committees and executives to the effort of reconstructing the Maori social and economic universe, was taken over by the (European) Minister of Maori Affairs and passed into law with its central Maori aspirations removed (Minsterial Advisory Committee 1986:17-18). Thereafter, as many have argued (and will be illustrated in the following chapter), urbanised Maori disproportionately comprised a pool of reserve labour to be hired and fired at need (Watson 1985:122).

Before considering the demographic implications of the changes, it is also important to acknowledge that (as implied above) Maori urbanisation had a significant *a priori* demographic context—the Maori population at this time was consummate for entry into the formal labour force not only because of its relatively low levels of formal attachment, but also because its growing and increasingly youthful population could no longer be maintained on its still-dwindling rural resources. These demographic factors had both negative and positive implications. On the negative side were the extremely high levels of youth dependency contained within the Maori age-structure, shown in Table 6.2.2. (Importantly, the effect of the differing Maori classification in the upper and lower panels of Table 6.2.2 should be noted. The data in the upper panel are perhaps the more valid for considering the issue of dependency, because those in the lower panel ignore to a greater extent the sizeable proportion of Maori children that have a non-Maori parent. The term 'dependency' is meant here in its aggregate form, and not in terms of familial dependency.) For a population with limited qualifications and skills, entry into the formal labour force would be at the unskilled and low paying end, and thus this dependency—in the 1940s considerably more than double that of non-Maori—would have to be met with relatively lower resources than those available, on average, to the latter. On the positive side this same youthful age structure would, ostensibly, see the Maori population gain qualifications, skills and improved health at a faster rate than its non-Maori counterpart. So too, once Maori fertility and mortality rates came to approximate those of the non-Maori population, would the relative size of the Maori working age population increase, and thus bring about reductions in its relative dependency ratios—that is, the ratios of the proportions of the population aged 0-14

and/or 65+ years to the proportion of the population aged 15-64 years. However, as Table 6.2.2 also indicates, this did not begin to happen in any sustained fashion until the late-1960s, whilst even by 1991, relative Maori youth dependency remained higher than it had been in the early 1900s.

Table 6.2.2
Youth, Aged and Total Dependency, Maori and Non-Maori, 1911-1991

Year	Youth Dependency (a)			Aged Dependency (b)			Total Dependency (c)		
	Maori	Non-Maori	Ratio*	Maori	Non-Maori	Ratio*	Maori	Non-Maori	Ratio*
	Sole/Single Origin Maori and Non-Maori								
1911	713	490	1.46	71	74	0.95	784	564	1.39
1916	762	535	1.43	65	78	0.83	828	613	1.35
1921	753	493	1.53	65	77	0.85	817	570	1.43
1926	817	460	1.78	83	78	1.07	901	538	1.68
1936	879	376	2.34	74	97	0.77	953	473	2.02
1945	914	395	2.31	58	138	0.42	971	534	1.82
1951	911	457	1.99	50	154	0.32	961	611	1.57
1956	928	507	1.83	46	159	0.29	974	666	1.46
1961	1009	541	1.87	41	155	0.26	1050	695	1.51
1966	1054	519	2.03	40	148	0.27	1095	667	1.64
1971	1001	500	2.00	40	150	0.27	1041	650	1.60
1976	862	453	1.90	41	154	0.26	903	607	1.49
1981	679	404	1.68	41	166	0.25	720	570	1.26
1986	543	358	1.52	41	172	0.24	584	530	1.10
1991	519	337	1.54	45	185	0.25	565	522	1.08
	Maori Ethnic Group and Non-Maori								
1981	765	385	1.98	40	170	0.24	805	555	1.45
1986	664	337	1.97	40	176	0.22	704	514	1.37
1991	625	318	1.96	42	189	0.22	667	507	1.31

Notes: (a) Number of persons aged 0-14 years per 1000 aged 15-64 years
(b) Number of persons aged 65+ years per 1000 aged 15-64 years
(c) Number of persons aged 0-14 and 65+ years per 1000 aged 15-64 years
*Maori dependency per Non-Maori dependency.
Non-Maori = Total Population minus specified Maori classification

Source: Computed from the age volumes of each Census (see Appendix D.3)

The apparent steadfastness of the Maori index for youth dependency *vis-à-vis* that of European reflects, of course, the population dynamics of both groups. On the Maori side, between the early-1940s and 1961, there was sustained high fertility in the context of rapidly falling infant mortality, the latter brought about in part by urbanisation and improving living standards, in part by universal hospitalisation of maternity cases and the associated ante-natal, maternal and child health measures, but overwhelmingly from a substantial fall in deaths and cross-infection from tuberculosis (Pool 1977, 1991a:133-160). Importantly, as Pool (1997, Chapter 6, 1991a:149-151) argues, the decline in mortality began before the introduction of antibiotics and chemotherapy, and must be attributed instead to wide-spread social legislation which followed systematic X-ray screening for tuberculosis with comprehensive social welfare back-up, most

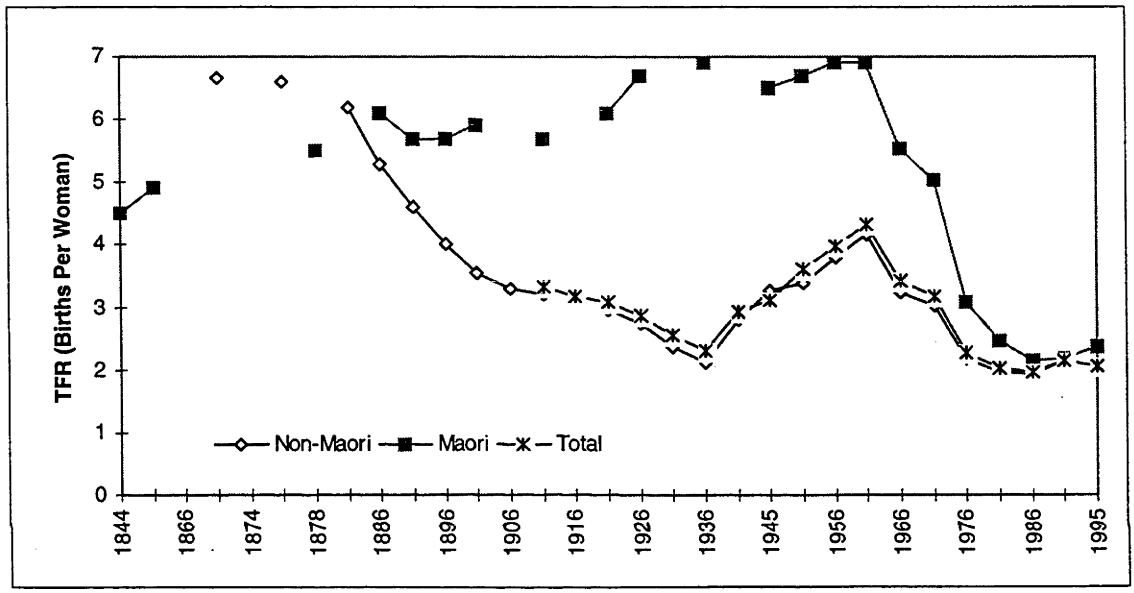
notably free medical treatment and state-subsidised housing. Together these dynamics, which undoubtedly saw Maori perceive a substantial reversal of their previous misfortunes, caused an equally substantial increase in the proportion of the Maori population aged 0-14.

Thereafter Maori fertility also began to fall, at first slowly and then rapidly, leaving in its wake the slowly and then rapidly subsiding levels of youth dependency evident in column 1 of Table 6.2.2. The fact that Maori urbanisation played a role in this fertility decline is undoubted—the shift of young Maori away from their extended families would, for example, have meant the breaking of some social mores and, at a pragmatic level, a certain loss of child carers. However, that the major decline in Maori fertility did not occur until the late 1960s, when close to two-thirds of Maori were urbanised, suggests that other factors were equally important. Maori children may, for example, have initially remained (or been sent to live) with relatives in rural areas, a not-unlikely scenario given the socio-cultural organisation and informal adoption networks of the period (Douglas 1977), and one that would have minimised the role incompatibility associated with formal labour force participation. Indeed, it is plausible that Maori fertility stayed high until 1961 as a combined result of the perceived socio-economic changes of the period, and of the continuation of Maori social organisation, which would have facilitated the large families that Maori in general valued. It would also, of course, have reflected the phenomenon of momentum effect (described in Chapter 3), whereby the declining infant mortality of earlier years would have resulted in an incremental increase in the numbers of each cohort reaching reproductive age.

The apparent decline in *relative* youth dependency between 1951 and 1961, observable in column 3 of Table 6.2.2, is, on the other hand, more a reflection of non-Maori population dynamics, in particular the baby boom, which, between 1940 and 1961, not only increased the proportion of non-Maori at the younger ages, but did so to a considerably greater extent than for Maori. These underlying non-Maori dynamics, which, aside from their commonly-experienced link with the post-war increase in marriage rates in most developed countries, have never been satisfactorily explained, can be ascertained from columns 2 and 4. Importantly, although both sets of dynamics (Maori and non-Maori) can be perceived of as having had a similar outcome, namely youth dependency peaking between 1961 and 1966 for both populations, it is essential to keep in mind the extreme differences in their underlying determinants. For non-Maori, who for some time had enjoyed relatively low infant mortality, youth dependency

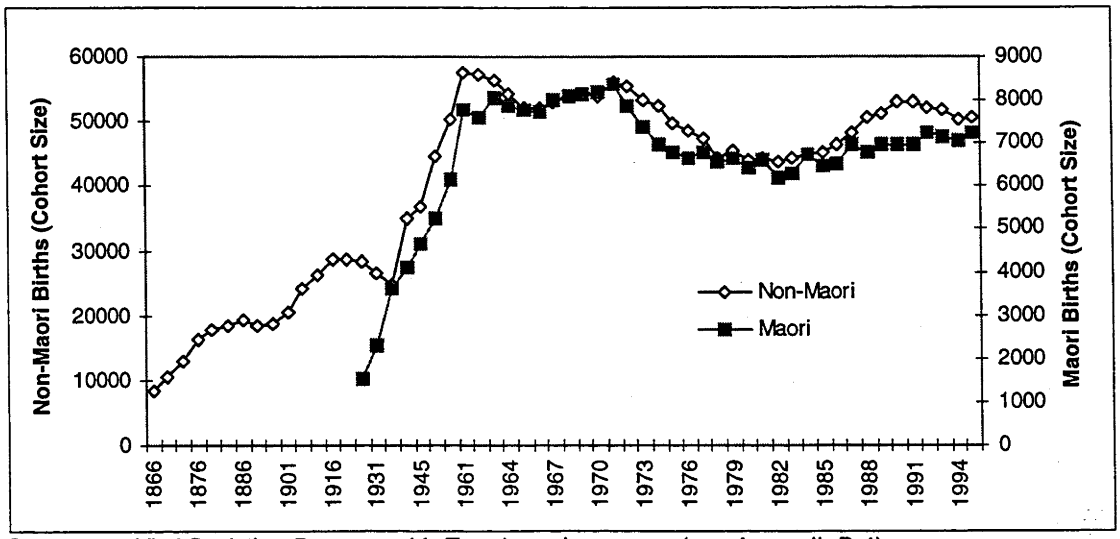
increased because birth rates (and numbers) increased; for Maori, birth rates—which had increased during the latter part of the nineteenth century—stayed more or less the same, whilst numbers rose and the fall in infant mortality accelerated. These trends, located in their historical context, are plotted in Figures 6.2.1-6.2.3, the latter of which—for the reasons explained in Chapter 4—shows life expectancy at birth (e_o^0) rather than infant mortality.

Figure 6.2.1
Total Fertility Rates (Births Per Woman), Maori and Non-Maori, 1840-1995



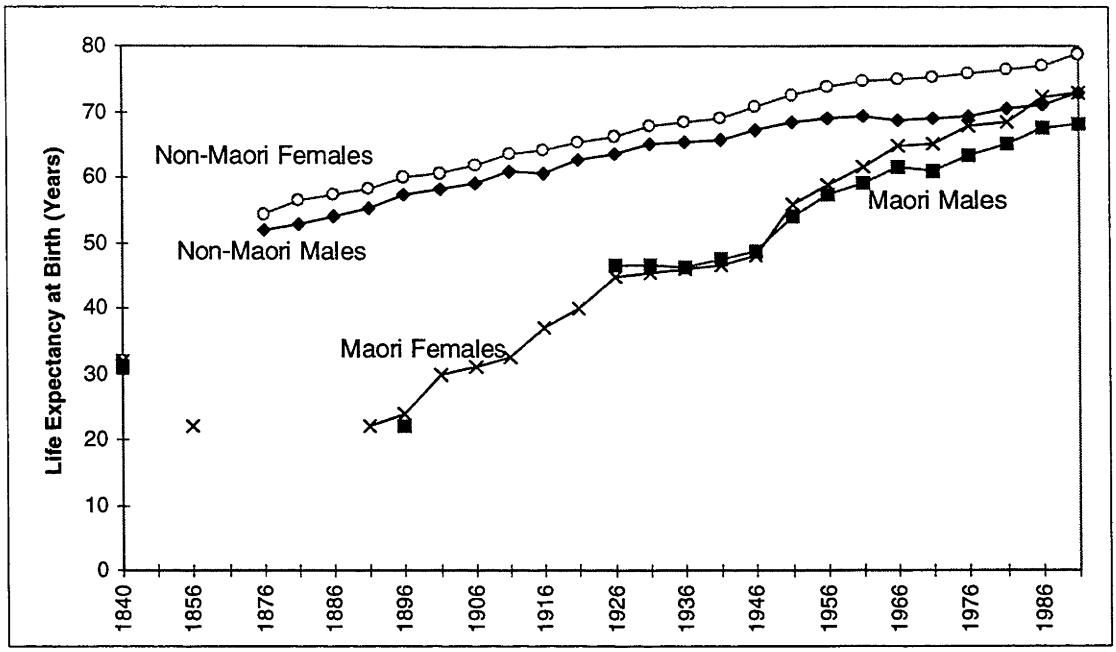
Source: See Appendix D.4.

Figure 6.2.2
Number of Births (Cohort Size) Maori and Non-Maori, 1866-1995



Source: *Vital Statistics, Demographic Trends*, various years (see Appendix D.4)

Figure 6.2.3
Life Expectancy at Birth, Maori and European/Non-Maori, by Sex, 1840-1995



Notes: Maori data prior to 1926 based on indirect estimation techniques (Pool 1985).
Source: Maori data prior to 1926: Pool 1985, Figure 31;
Pool 1985, Tables 116 and 12; Pool 1990:41;
Demographic Trends 1993, Table 4.9 (See Appendix D.5 for all data).

Before returning to the implications of the relative age structures derived from these dynamics, attention is drawn to an earlier point regarding the apparently 'interlocked' nature of these age structures, and the proposals given in relation to Hypothesis 4 in Chapter 4 (that an increase or decrease in e_o^0 of approximately 15-20 per cent over a ten year period for either population would reflect a 'substantial' change). Although Maori life expectancy data for the early historical period are based on the technique of indirect estimation and thus are subject to a degree of error (see Pool 1982), the dramatic decline in female e_o^0 between 1840 and 1856—a magnitude of some 30 per cent—is further supported by a second estimation also of this level in 1896 for both males and females. That this decline was a direct result of an equally substantial change in the productive base of the Maori economy, and with it, social and economic relationships between Maori and European, must also be concluded from the foregoing historical review. Similarly, it would appear that the dramatic increase in European e_o^0 between 1840 and 1876 (an increase of 68 per cent) also reflected these changed social and economic relationships, whilst the slowly increasing Maori e_o^0 from the end of the century, and the dramatic improvement between 1946 and 1956 (an increase of 17 per cent in ten years) reflects a substantial reversal of the earlier situation. Thus the

hypothesis that such trends are connected is well supported, in the first case suggesting that the substantial improvements in European/non-Maori life expectancy over the 19th Century were in large part a function of the material well-being of the European population, initially appropriated from Maori, whilst the declines for Maori reflect, along with the ravages of disease and war, the opposite; and in the second case, that the turn-of-the-century beginnings of demographic convergence (at least in terms of e_o^0) occurred as the benefits of living in the wealthiest country in the world (as measured by GDP per capita) were gradually extended to Maori, albeit on paternalistic terms.

These arguments are returned to in Chapter 11, which considers in more detail the fertility trends depicted in Figure 6.2.1 for the 1960-1991 period, against the relative employment and earnings experience of Maori and European. For now, the focus returns to the resulting ethnic differences in age structure, and to the various ways in which, for the purposes of this thesis, the data need to be understood. Reflecting the foregoing patterns and trends, columns 3 and 4 of Table 6.2.3 show that between 1911 and 1945 the relative proportions of Maori to non-Maori aged 0-14 years underwent a steady increase. Between 1956 and 1961, as the European baby boom cohorts impacted upon the European/non-Maori age structure, the proportions of Maori to non-Maori began to decline, and, although they underwent a further brief increase around 1966, reflecting a slightly greater rate of decline in European than Maori fertility between 1961 and 1966 (22 per cent, compared with 20 per cent, see Appendix D.4), the proportional decline continued, at least until 1986.[13] However, as the data in column 5 imply, these trends tell only part of the story, that which has implications for understanding the overall effect on each ethnic group of the relative proportions of each group approaching the age of labour force entry and/or eventually becoming employed (or unemployed). Whilst this manifestation of age structure is central to the concerns of Chapters 7-10, the numerical ratio data in column 5, by contrast, relate to the absolute size of each group, and have implications for understanding the relationship between cohort size and inequality as examined in Chapter 11. The distinction between the two is perhaps best illustrated by recalling from Chapter 4 that the percentage ratio (column 4) acts as a multiplier of any age-specific effects, whilst the numerical difference (column 5) reflects the contribution

[13] Again it should be recalled that the Maori Ethnic Group is likely to have experienced a disproportionate increase in numbers from the inclusion of inter-ethnic births, especially at these younger ages. However, this situation is of major significance only where 'dependence' ratios are being compared. These comments apply also to Tables 6.2.4 and 6.2.5, and to Figures 6.2.4 and 6.2.5.

to the total cohort made by Maori within the cohort. Importantly, the former shows a general decline after the effects of peak fertility were passed, whilst the latter increases.

Table 6.2.3
Percentage of Population Aged Less Than 15 Years by Ethnic Classification, Percentage Point Difference Between Maori and Non-Maori, Proportionate Ratio of Maori to Non-Maori, and Numerical Ratio of Maori to Total, 1911-1991

	Sole/Single Origin Maori	Non-Maori	Percentage Point Difference*	Percentage Ratio^ Maori:Non-Maori	Numerical Ratio# Maori:Total
1911	40.0	31.3	8.7	1.28	0.06
1916	41.7	33.2	8.6	1.26	0.05
1921	41.4	31.4	10.0	1.32	0.05
1926	43.0	29.9	13.1	1.44	0.06
1936	45.0	25.5	19.5	1.76	0.09
1945	46.3	25.8	20.6	1.80	0.10
1951	46.5	28.4	18.1	1.64	0.09
1956	47.0	30.4	16.6	1.55	0.09
1961	49.2	31.9	17.4	1.54	0.10
1966	50.3	31.1	19.2	1.62	0.12
1971	49.1	30.3	18.8	1.62	0.12
1976	45.3	28.2	17.1	1.61	0.13
1981	39.5	25.7	13.8	1.53	0.13
1986	34.3	23.4	10.9	1.47	0.13
1991	33.2	22.2	11.0	1.50	0.14
	Maori Ethnic Group and Non-Maori				
1981	42.4	24.8	17.6	1.71	0.19
1986	39.0	22.3	16.7	1.75	0.20
1991	37.5	21.1	16.4	1.78	0.21

Notes: *Percentage Maori minus Percentage Non-Maori
^Percentage of Maori as a ratio to Percentage of Non-Maori
#Number of Maori as a proportion of number of Maori plus Non-Maori

Source: Computed from the age volumes of each Census (see Appendix D.3).

Nevertheless, as explained in Chapter 3, the combined circumstances of falling infant mortality and falling fertility which ultimately give rise to a declining proportion of youth, are, in turn, typically correlated with an inverse and ostensibly positive increase in the proportion of the population at the working ages (15-64 years). Table 6.2.4 shows the relative expansion of the latter sector for Maori. The difference between the two populations peaked in 1936 at nearly 17 percentage points, whilst by 1991 it was approaching unity. The extent to which this shift may have translated into positive increases in Maori labour force participation and income over the period, and thereby into an improved capacity to accommodate the higher levels of dependency shown above, however, can only be ascertained by turning to labour force and other production-related data, as is done in the following chapters.

Table 6.2.4
Percentage of Population Aged 15-64 Years by Ethnic Classification, Percentage Point Difference Between Maori and Non-Maori, Proportionate Ratio of Maori to Non-Maori, and Numerical Ratio of Maori to Total, 1911-1991

	Sole/Single Origin Maori	Non-Maori	Percentage Point Difference*	Percentage Ratio^ Maori:Non-Maori	Numerical Ratio# Maori:Total
1911	56.1	64.0	-7.9	0.88	0.04
1916	54.7	62.0	-7.3	0.88	0.04
1921	55.0	63.7	-8.7	0.86	0.03
1926	52.6	65.0	-12.4	0.81	0.04
1936	51.2	67.9	-16.7	0.75	0.04
1945	50.7	65.2	-14.5	0.78	0.05
1951	51.0	62.1	-11.1	0.82	0.05
1956	50.7	60.0	-9.4	0.84	0.05
1961	48.8	59.0	-10.2	0.83	0.06
1966	47.7	60.0	-12.3	0.80	0.06
1971	49.0	60.6	-11.6	0.81	0.07
1976	52.5	62.2	-9.7	0.84	0.07
1981	58.1	63.7	-5.6	0.91	0.08
1986	63.1	65.4	-2.2	0.97	0.09
1991	63.9	65.7	-1.8	0.97	0.09
	Maori Ethnic Group and Non-Maori				
1981	55.4	64.3	-8.9	0.86	0.11
1986	58.7	66.1	-7.4	0.89	0.11
1991	60.0	66.3	-6.4	0.90	0.12

Notes: *Percentage Maori minus Percentage Non-Maori
^Percentage of Maori as a ratio to Percentage of Non-Maori
#Number of Maori as a proportion of number of Maori plus Non-Maori
Source: Computed from the age volumes of each Census (see Appendix D.3).

As Table 6.2.5 shows, the proportions of Sole/Single Origin Maori elderly at the end of the period were somewhat lower than they were at the beginning (a fall of more than 25 per cent), whilst the opposite is true for non-Maori (an increase of 156 per cent). Clearly (as Table 6.2.2 also showed), the greater youth-related dependency faced by Maori over the period was strongly and increasingly matched by the greater aged-dependency of non-Maori. Even the greater rapidity of the 1970s fertility decline for Maori, shown earlier in Figure 6.2.1, had by 1991 made little impact on the growing percentage point difference between the two populations in the proportion of elderly.

However, the greater rapidity of fertility decline for Maori will have its sequel in a considerably more rapid ageing process than that experienced by non-Maori, the early manifestations of which can be ascertained from Table 6.2.5. In the quarter-century between the nadir of Maori elderly in 1966, and 1991 (employing the Sole/Single Origin Maori classification), the proportion of Maori aged 65+ increased by more than 50 per cent, against a 37 per cent increase for non-Maori. Although of minimal import in the 1990s (and indeed, the increase reflecting less than a single percentage point in absolute

terms), the relative velocity and magnitude of this shift will have consequences for Maori aged dependency in the middle of the twenty-first century.

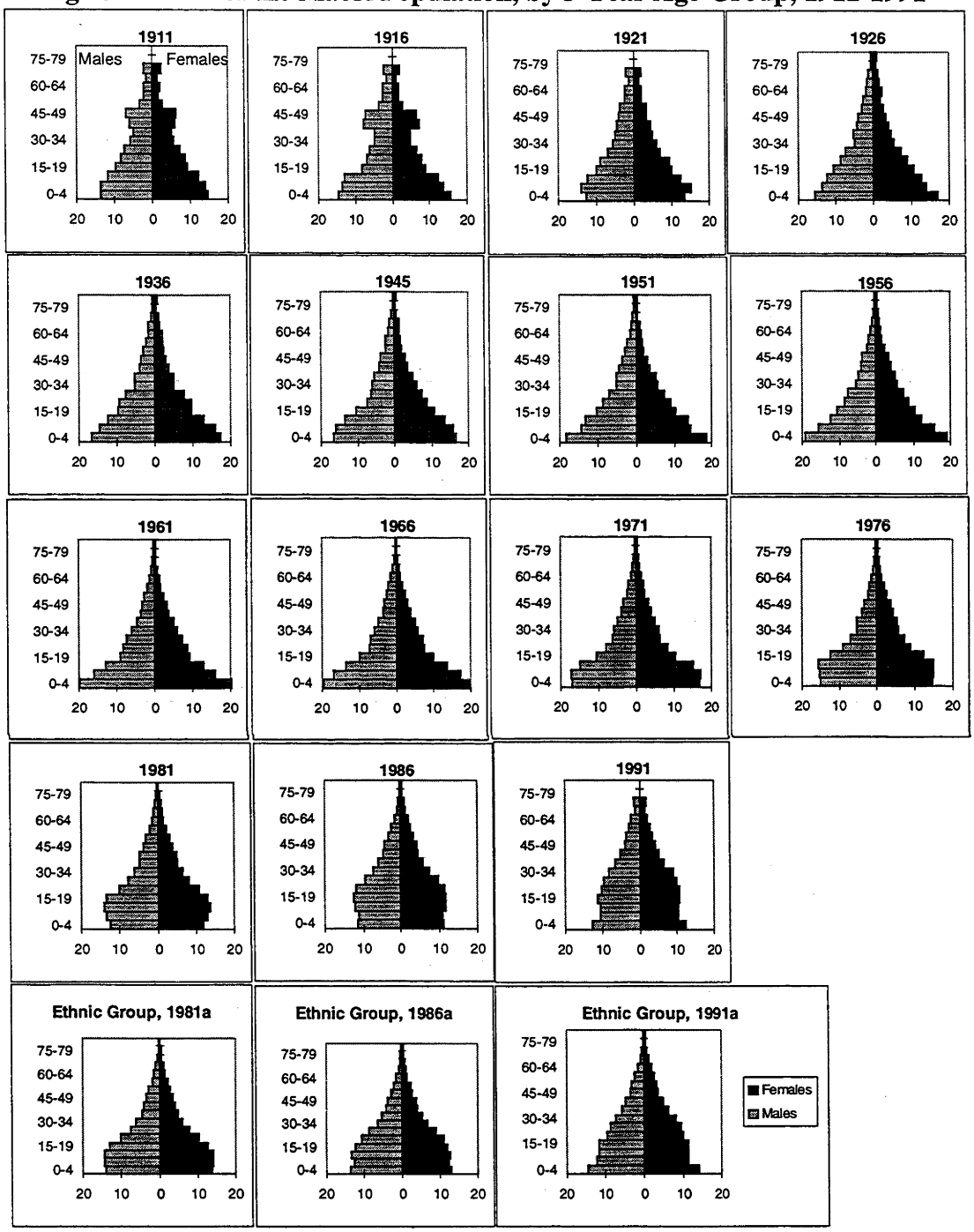
Table 6.2.5
Percentage of Population Aged 65+ Years by Ethnic Classification, Percentage Point Difference Between Maori and Non-Maori, Proportionate Ratio of Maori to Non-Maori, and Numerical Ratio of Maori to Total, 1911-1991

	Sole/Single Origin Maori	Non-Maori	Percentage Point Difference*	Percentage Ratio^ Maori:Non-Maori	Numerical Ratio# Maori:Total
1911	4.0	4.7	-0.8	0.83	0.04
1916	3.6	4.9	-1.3	0.73	0.03
1921	3.6	4.9	-1.3	0.73	0.03
1926	4.4	5.1	-0.7	0.87	0.04
1936	3.8	6.6	-2.8	0.58	0.03
1945	2.9	9.0	-6.1	0.33	0.02
1951	2.5	9.6	-7.0	0.27	0.02
1956	2.3	9.6	-7.2	0.24	0.02
1961	2.0	9.1	-7.1	0.22	0.02
1966	1.9	8.9	-6.9	0.22	0.02
1971	1.9	9.1	-7.1	0.21	0.02
1976	2.1	9.6	-7.4	0.22	0.02
1981	2.4	10.6	-8.2	0.22	0.02
1986	2.6	11.3	-8.7	0.23	0.02
1991	2.9	12.1	-9.2	0.24	0.02
	Maori Ethnic Group and Non-Maori				
1981	2.2	10.9	-8.7	0.20	0.03
1986	2.3	11.6	-9.3	0.20	0.03
1991	2.5	12.5	-10.0	0.20	0.03

Notes: *Percentage Maori minus Percentage Non-Maori
^Percentage of Maori as a ratio to Percentage of Non-Maori
#Number of Maori as a proportion of number of Maori plus Non-Maori
Source: Computed from the age volumes of each Census (see Appendix D.3).

Figures 6.2.4 and 6.2.5 summarise the above dynamics in terms of overall changes in population age structure. Evident in the first two panels (1911 and 1916) of Figure 6.2.4 is the relatively mature age structure experienced by the Maori population around the early years of the century, reinforced by what would appear to be the effects of high infant and child mortality occurring some 30-40 years earlier, during the isolation years of the 1870s and 1880s. However, the compression shown in these age structures around 30-40 years of age is also a reflection of *subsequent* population dynamics. As shown earlier in Figure 6.2.1, birth rates are believed to have been rising during the 1860s to 1870s and to have peaked around 1886, whilst these trends were accompanied by a small but accelerating decline in infant mortality (Pool 1991a:75-82), bringing about a subsequent increase in the proportion at younger ages and a reversal in the trend of population ageing.

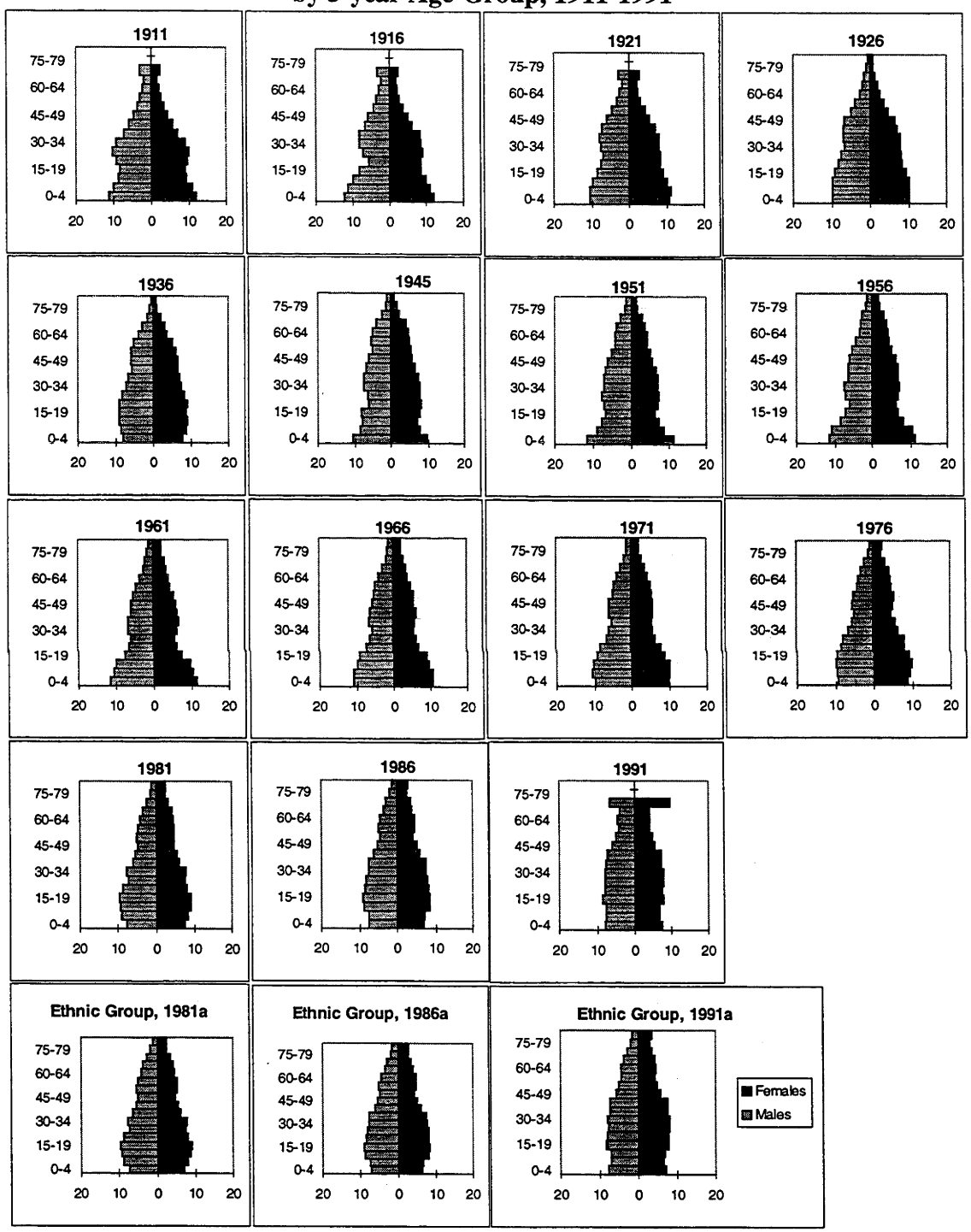
Figure 6.2.4
Age Structure of the Maori Population, by 5-Year Age-Group, 1911-1991



Notes: *Maori = Sole/Single Origin Maori, with exception of Figures 1981a-1991a, which pertain to Maori Ethnic Group
1911-1976 = *De Facto* Population; 1981-1991 = *De Jure* Population
1911-1921 and 1991, oldest age group = 70+ years
NB. See 1991(a) for Legend

Source: Compiled from age volumes, *Census of Population and Dwellings*, various years (see Appendix D3)

Figure 6.2.5
Age Structure of the Non-Maori Population, by 5-year Age-Group, 1911-1991



Notes: * Non-Maori = Total Population minus specific Maori Classification
1911-1976 = *De Facto* Population; 1981-1991 = *De Jure* Population
1911-1921 and 1991, oldest age group = 70+ years
NB. See 1991(a) for Legend

Source: Compiled from age volumes, *Census of Population and Dwellings*, various years (see Appendix D3)

So too are the effects of Maori (male) participation in the Second World War visible in the panel for 1945. Over the years between 1911 and 1945 can also be seen the increasing youthfulness of the Sole/Single Origin Maori age structure, peaking in 1966, and the rapid shift thereafter to an increasingly rectangular structure, typical of an early post-transition population. That said, the small increase in the 0-4 year age group in the panel for 1991 appears to run counter to these trends. So too do the increasingly youthful age structures depicted in the three panels for the Maori Ethnic Group population (1981a, 1986a and 1991a), located at the base of Figure 6.2.4. The extent to which these trends are due to the currently high proportions of women at childbearing ages—deriving from the births of the 1960s; and/or to an increase in the proportion of children being classified as Maori by their parents, is uncertain. However, assuming that these children continue to identify as Maori (i.e. that they do not shift to alternative ethnic classifications over time), the latter point is also somewhat irrelevant. As explained in Chapter 5, the technical facets of Maori blood fraction are considerably less important than are patterns and trends in the social indicators for those who *claim* to be Maori.[14]

For the non-Maori population, data for which are shown in Figure 6.2.5, the effects of the two world wars (the indents in the relevant age structures at 20-30 years primarily reflecting troop absences), the following baby boom with its peak in 1961, and the increasing rectangularisation of the age structure since, are also clear. For non-Maori more than Maori however, these structures reflect not only changing fertility and mortality, but also migration.

Reorganising these data by cohort (see Appendix D.6) permits the longitudinal effects of attrition (by deaths and emigration) and/or augmentation (by immigration) to be illustrated. These data show that non-Maori cohorts born 1922-1946 were heavily augmented over their middle-adult years by the immigration of the 1970s, the greatest effects being experienced by the cohort born 1937-1941. For both males and females in this cohort, cohort size peaked at age 35-39, by which time it had increased in size by 23 per cent over its size at birth. This was closely followed by the experience of the cohort born 1932-1936, which reached its peak size at age 40-44, when it was 21 per cent larger than at birth. By contrast, the size of the cohort born 1957-1961, at the peak of the baby boom, and aged 30-34 years in 1991, experienced its peak size (thus far) at age

[14] Important in this regard is the attention paid to the ethnic classification of the data employed in the following chapters.

15-19 for males and age 10-14 for females, at which time it had increased by a mere 3 and 4 per cent respectively. Thereafter the cohort declined in size, its male component falling to 91 per cent of its size at birth, its female component, to 98 per cent.

Indeed, cohorts born 1952-1971 appear to have been particularly affected by net out migration, a phenomenon that applies to non-Maori and Maori alike, but is even more pronounced for Maori. The Maori male cohorts born 1957-1961 and 1962-1966, for example, had by 1991 (when aged 30-34 and 25-29 years) declined in size by 23 and 24 per cent respectively. For Maori females these proportions in 1991 had similarly declined by 15 and 16 per cent.

Unfortunately, these effects, which are of some import to the key questions being explored in this thesis (see, for example, Zodgekar 1985 on the labour force), cannot be explored in any detail. However, their implications are again noted in Chapter 11, which considers the effect of cohort size on ethnic inequality. In the interim, the thesis turns to the analysis of ethnic differentials in New Zealand's socio-economic structure.

6.3 SUMMARY

The Maori chiefs who signed the Treaty of Waitangi on behalf of their tribes in 1840 did so in a spirit of co-operation, believing that the Crown would protect them against the more negative features of colonialism, whilst extending to them its benefits. They could not have forseen the extent to which the incoming settler population would so rapidly and dramatically overwhelm their numbers, physically, socio-economically, culturally and politically. Indeed it is recorded that one such chief said later that he had planned to station one or two pakeha at each of his pa sites, in order that the latter would act as liaison between trade goods produced by Maori, and the markets in Britain (reference unknown).

Most importantly, the subsequent fall in material (and physical) well-being of Maori was pre-empted not by any inherent incapacity to develop economically, but by settler greed for the highly productive land, and through facilitation of access to it by the overtly racist and legal processes of a succession of settler governments. So dispossessed, Maori had no alternative but to eventually re-enter the market economy as—disproportionately—sellers of their labour power, and thus New Zealand's initial relations of production came to be established along these essentially racial boundaries.

This is a point that must be emphasised, because it is common to see the situation of Maori in the 1990s referred to as reflecting 150 years of involvement in the capitalist economy, whereas in truth the period is closer to 50 years. Indeed, even the first 20 of these latter years must be viewed from the special perspective associated with the mass urbanisation of Maori from their rural hinterlands and semi-subsistence economy.

Over the period in its entirety, both the European/non-Maori and Maori populations experienced demographic transition, that of the former beginning shortly after arrival in New Zealand, and at the turn of the century conferring on it the highest levels of life expectancy and one of the lowest fertility rates in the world; that of the latter beginning after the turn of the century with a slowly accelerating fall in infant mortality, but not followed by fertility decline until the 1960s. However, prior to this 'delayed' variant of demographic transition for Maori was demographic change of a very different sort—one in which infant mortality (and mortality *per se*) and then rates of childbearing initially increased, seemingly as a result of the material, political and social disruption wrought by colonisation, but also reflecting the legacy of venereal disease brought by sailors and whalers prior to 1840. Although seldom articulated in Marxist terminology, such 'pre-transition' patterns have been increasingly recognised in the demographic literature as occurring when the capitalist mode of production comes into contact with a traditional/domestic economy. What has been less well acknowledged is the extent to which the subsequent age structures and their long-term implications are a direct result of these dynamics, and not least of the power relations between the affected groups. For the European population, demographic transition occurred largely as the result of the growing wealth of the population, appropriated from the indigenous Maori. For Maori, demographic transition was not merely of the 'delayed variant', but was for a long time also *denied* by virtue of that appropriation. That the Maori population in both the 1940s and the 1990s should be so youthful *vis-à-vis* European is equally a consequence of these 'delayed' dynamics (albeit also reflecting the disproportionate allocation of inter-ethnic births to the Maori Ethnic Group) as are the socio-economic and policy implications that these relative age structures engender.

7

ETHNIC DIFFERENTIALS IN LABOUR FORCE STATUS AND EMPLOYMENT STATUS

7.0 INTRODUCTION

The situation of the Maori population as it began to re-enter the capitalist economy in the 1940s was that of a disproportionately proletarianised and youthful society, two characteristics often associated with the economically disadvantaged populations of the world. However, given equality of opportunity in a country renowned for its egalitarianism and 'self made men', these two factors would not necessarily equate with disadvantage for Maori. In the first place, a population that had only its labour power to sell stood to be near fully employed in the forthcoming post-war economic boom, and, *ceteris paribus*, to eventually become employers and self-employed in similar proportions to European. So too, over time, would a relatively youthful population stand to gain disproportionately in terms of both education and contemporary skills acquired in the work-place, making it better equipped to compete in a technologically advancing labour market. Furthermore, as implied in the previous chapter, once the fertility of that youthful population fell it would enjoy a window period in which the proportion of those at the working ages would expand for some years before the negative effects of population ageing would begin to cancel out those gains. Taken together, these factors imply a process of decreasing labour force participation differentials, and decreasing compositional differentials within that participation.

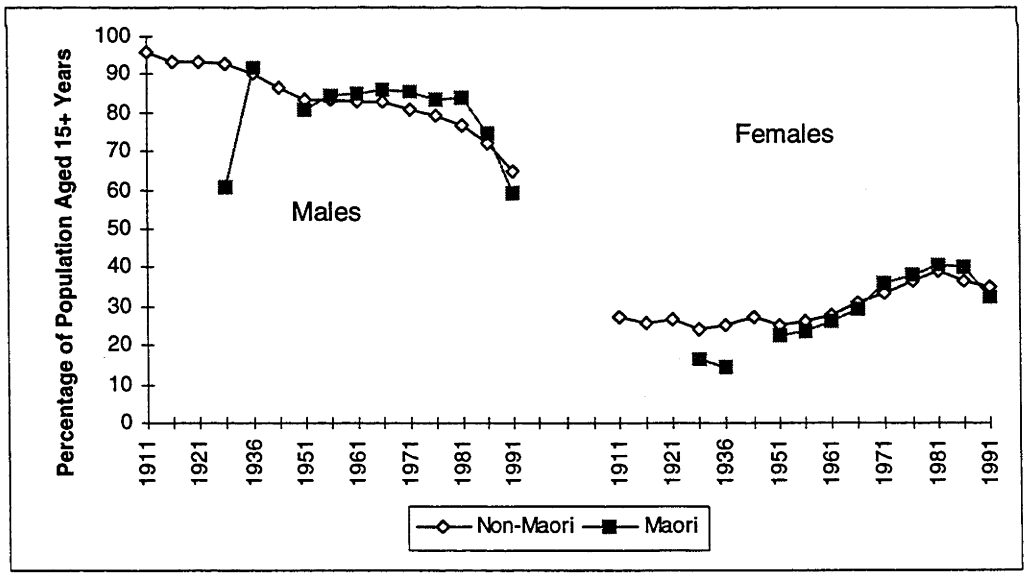
This chapter explores these arguments through an examination of trends and differentials in labour force status and employment status. Each of the two sections begins with an overview of historical trends and then moves to a component analysis whereby the proportion of the observed (crude) differential for each category that is due to (a) age structure and (b) the underlying—'true'— difference (reflecting factors such as qualifications, skills) is demonstrated. Each section concludes with a review of age-specific trends for key indicators, in some cases by cohort, the latter giving an indication as to whether changes across the life cycle have been endogenous to certain cohorts, or universal.

Importantly, as explained in Chapter 5, ethnic and other classificatory changes across the period mean that data are often somewhat discontinuous. Considerable attention has been paid to this essentially irresolvable matter, and all discontinuities and discrepancies have been fully acknowledged.

7.1 LABOUR FORCE STATUS

Figure 7.1.1 shows long term trends and ethnic differentials in full-time labour force participation. Most obvious is the overall decline in participation for males of both ethnic groups, against an equally substantial increase for females, at least until 1981-1986, and the fact that rates for Maori and non-Maori have been remarkably similar for most of the period, especially for females. Moreover, since the mid-1950s for males and the early 1970s for females, Maori rates have been a little higher than those for non-Maori, remaining so until the most recent observation (1991).

Figure 7.1.1
Full-Time Labour Force Participation Rates for Sole/Single Origin Maori and Non-Maori Populations Aged 15+ Years, by Sex, 1911-1991

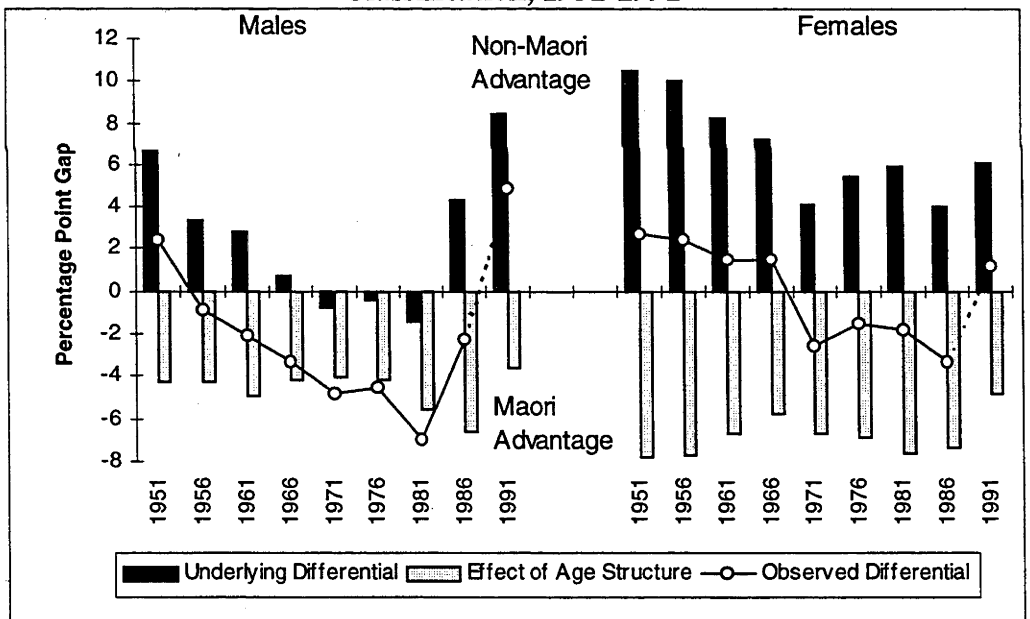


Notes: 1911-1976 = *De Facto* population, 1981-1991 = *De Jure* population
Source: Appendix E.1

As implied above, however, these levels are significantly affected by the differing age structures of Maori and non-Maori. When the observed differentials (the difference between the crude labour force participation rates of non-Maori and Maori) are

subjected to component analysis, as in Figure 7.1.2, the underlying differentials show higher participation for Maori only for males (denoted by negative values), only between 1971 and 1981, and to a much more marginal degree than implied by the observed differentials. At all other observations and for both sexes, the underlying differentials show higher participation for non-Maori. This fact is concealed because the Maori age structure is more 'advantageous' to labour force participation at all observations, and, with the exception of data for males between 1971-1981, either offsets or completely cancels out the underlying differentials.[1] Furthermore, where Figure 7.1.1 showed greater similarity of female than male participation rates and trends, Figure 7.1.2 shows that underlying inequality has historically been somewhat greater amongst females, although this situation has recently reversed.

Figure 7.1.2
Component Analysis of Ethnic Differentials in Full-Time Labour Force Participation Rates for Population Aged 15+ Years, by Sex and Ethnic Classification, 1951-1991



Notes: 1951-1976 = *De Facto* population, 1981-1991 = *De Jure* population.
1951-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group.
Non-Maori = Total Population minus specified Maori classification.

Source: Appendix E.2

[1] It should be noted that there is a very slight difference in the data for 1991 between Figures 7.1.1 and 7.2.2. The difference reflects the fact that whilst *total* full-time labour force data for the Sole/Single Maori Origin population in 1991 were published, the age specific data necessary for standardisation purposes were not. The discrepancy between the two classifications is very small, the LFPR for Sole/Single Origin Maori males used in Figure 7.1.1 being 59.1 per cent, and that for Maori Ethnic Group males in Figure 7.1.2 being 60.0 per cent. The equivalent figures for females are 32.4 and 33.8 per cent.

Importantly, the use of the term 'advantage' is not meant to imply that high levels of labour force participation are necessarily good or desirable, especially at the younger, tertiary education ages, or at the older, retirement ages, an interpretation that could be attempted only by turning to age-specific data. However, because unemployment is included in the index for labour force participation, the category itself is a rather blunt instrument for even attempting such an appraisement. Accordingly, attention is turned instead to labour force status.

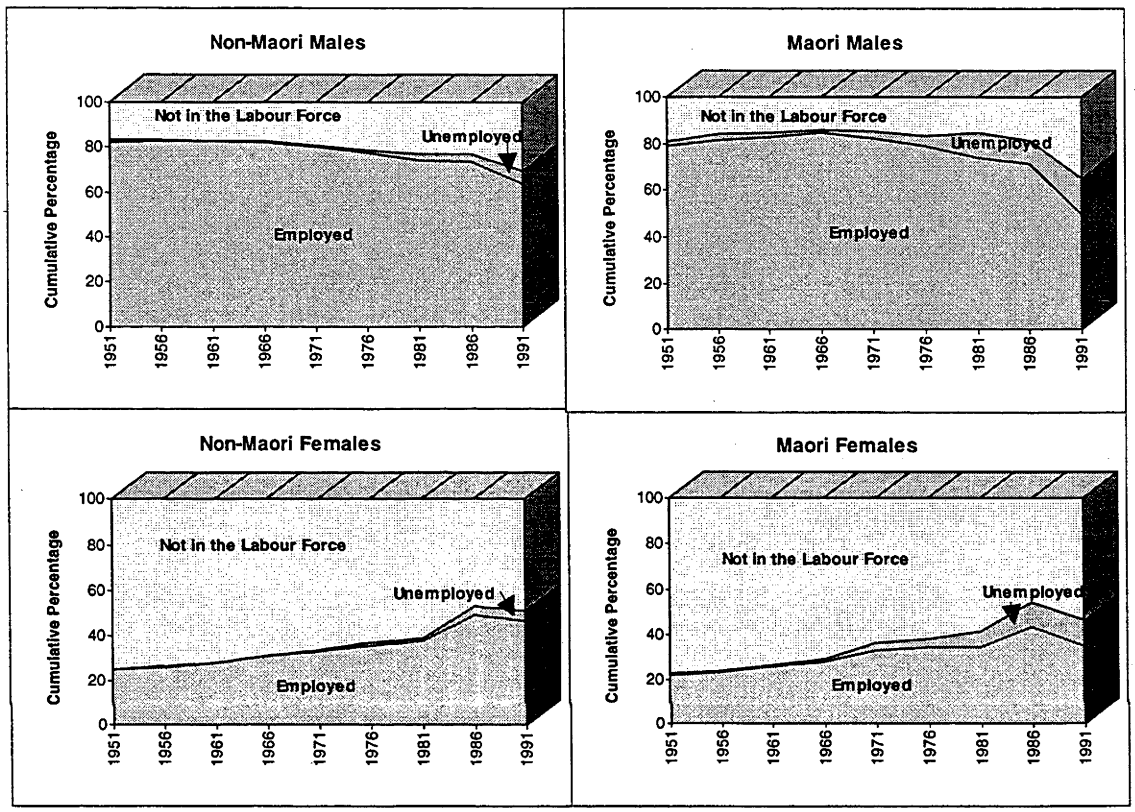
First, it should be recalled from Chapter 5 that the data contain a significant shift in the classification of the labour force between 1981 and 1986, from full-time only to full-time plus part-time, and in the hours that denote full- and part-time. This essentially irresolvable shift[2] has minimal effect on the distribution for males, but a considerable effect on trends in the proportion of females in each category. Nevertheless, as Figure 7.1.3 shows, for neither group was the broader definition of employment enough to counter the substantial increases between 1986 and 1991 in the proportions unemployed and not in the labour force. That is to say, despite a potential increase in the proportions in employment due to the inclusion of part-time work from (and including) 1986, the proportion in employment actually fell, for both sexes and both ethnic groups. By 1991, just over half (50.4 per cent) of all Maori males over the age of 15 were *not* in employment (unemployment plus not in the labour force), against 36 per cent of all non-Maori males. (Data for females are discussed separately below). Furthermore, for males, these proportions reflect substantial increases over their corresponding rates in 1951, when only 21 per cent of all Maori males, and 18 per cent of non-Maori males, were not in employment.

The data thus also identify a substantial decline in inter-ethnic differences with regard to the relative proportions of those *in* employment, for males, from 0.96 Maori per non-Maori in 1951, to 0.78 in 1991. Since the Maori age structure is considerably younger than that of non-Maori, it would be expected that the proportion of the former in employment would be higher, rather than lower, than the latter. Indeed, this is what might have been suggested by the labour force participation data in Figure 7.1.2. The findings thus suggest that the Maori male population has been receiving very little

[2] By drawing on Database A it would have been possible to aggregate full- and part-time employment for the 1976-1991 period, but this would have simply temporally re-located the disjunction. Figure 7.1.4 below suggests that the trends would have differed only minimally.

employment-related advantage from its more youthful age structure, an issue that is addressed in a moment.

Figure 7.1.3
Labour Force Status: Percentage of Population Aged 15+ Years in Each Category, by Sex and Ethnic Classification, 1951-1991



Notes: 1951-1986 denotes Sole/Single Origin Maori; 1991 denotes Maori Ethnic Group.
Non-Maori denotes Total population minus specified Maori classification.
1951-1981 = Full Time only, 1986-1991 = Full Time + Part Time.
Source: Compiled from the *Census of Population and Dwellings*, various years (see Appendix E.3).

Although the age structure of the Maori female population is slightly older than that of Maori males, similar comments must also be applied to trends for females. Whilst absolute trends for females have been very different across the period to those for males, showing an overall *increase* in employment for both groups, where Maori females in 1951 had been almost as likely as non-Maori females to be employed (a ratio of 0.9 Maori per non-Maori), by 1991 this ratio had fallen to 0.75.

When considered alongside the findings for males, the data reveal that the total proportion of all adult Maori (15+ years) not in employment increased from 49 per cent in 1951 to 58 per cent in 1991, but for non-Maori it actually declined, from 47 to 45 per cent, due to the greater increase in employment for non-Maori than Maori females.

Importantly, the similarity of the Maori and non-Maori indices for 1951 must be emphasised. In 1951, the ratio (Maori to non-Maori proportions not in employment) was 1.04; by 1991 it was 1.3.

The increase in this gap has significant implications not only for ethnic inequality *per se*, but also for dependency, typically measured in terms of the proportion of the population at the key working ages, 15-64 years, *vis-à-vis* those aged 0-14 and 65+ years, and not in terms of the proportion who are actually employed. In order to more appropriately address this issue, Table 7.1.1 gives an overview of trends for the working age population only. Because unemployment data are not available by age for the period 1956-1971, only trends for 1976-1991 can be reviewed.[3] A shift in ethnic classification between the forgoing analyses and Table 7.1.1 is also necessitated, from Maori and non-Maori to Maori Ethnic Group and European.

Table 7.1.1
Labour Force Status: Percentage of Maori Ethnic Group and European Populations Aged 15-64 Years in Each Category, Ratio of Proportions of Maori to Non-Maori in Employment and Not in Employment, and Index of Ethnic Dissimilarity (Standardised and Unstandardised), by Sex, 1976-1991

Ethnic Group and	MALES				Index	FEMALES				Index
Labour Force Status	1976	1981	1986	1991	1991/1976	1976	1981	1986	1991	1991/1976
EUROPEAN										
Full-Time	84.73	82.99	80.04	70.10	0.83	34.71	36.57	41.74	39.59	1.14
Part-Time	1.79	2.59	3.82	5.03	2.81	14.20	17.42	17.28	18.59	1.31
Unemployed	1.12	2.50	3.57	6.87	6.15	0.93	1.99	4.90	5.65	6.08
Not in Labour Force	12.36	11.92	12.57	18.00	1.46	50.15	44.02	36.09	36.18	0.72
Total	100.00	100.00	100.00	100.00	1.00	100.00	100.00	100.00	100.00	1.00
NUMBER	821001	840879	884193	884127		805470	827877	872844	881976	
MAORI										
Full-Time	80.19	76.21	68.86	47.65	0.59	33.31	33.10	36.43	27.00	0.81
Part-Time	1.16	1.87	5.88	4.71	4.07	7.63	9.73	10.40	9.76	1.28
Unemployed	4.02	9.61	10.19	16.38	4.07	3.60	6.72	11.09	12.11	3.37
Not in Labour Force	14.63	12.31	15.07	31.26	2.14	55.47	50.45	42.08	51.13	0.92
Total	100.00	100.00	100.00	100.00	1.00	100.00	100.00	100.00	100.00	1.00
NUMBER	90240	105960	117285	126816		91587	107535	120453	134046	
RATIO OF PROPORTIONS IN EMPLOYMENT (FULL-TIME PLUS PART-TIME)										
Maori per European	0.94	0.91	0.89	0.70	0.74	0.84	0.79	0.79	0.63	0.76
RATIO OF PROPORTIONS NOT IN EMPLOYMENT (UNEMPLOYED PLUS NOT IN THE LABOUR FORCE)										
Maori per European	1.38	1.52	1.56	1.92	1.38	1.16	1.24	1.30	1.51	1.31
Index of Dissimilarity	5.18	7.50	11.18	22.78	4.40	7.98	11.16	12.18	21.42	2.68

Notes: Unemployment = Full-time for 1976-1981; Full-time plus part-time for 1986-1991.
Index of Dissimilarity based on percentage in each individual labour force status.
Source: Database A

[3] The shortcoming means that for the years 1956-1971 it is possible to derive 'in employment' and 'not in employment' data for the population aged 15+ years only

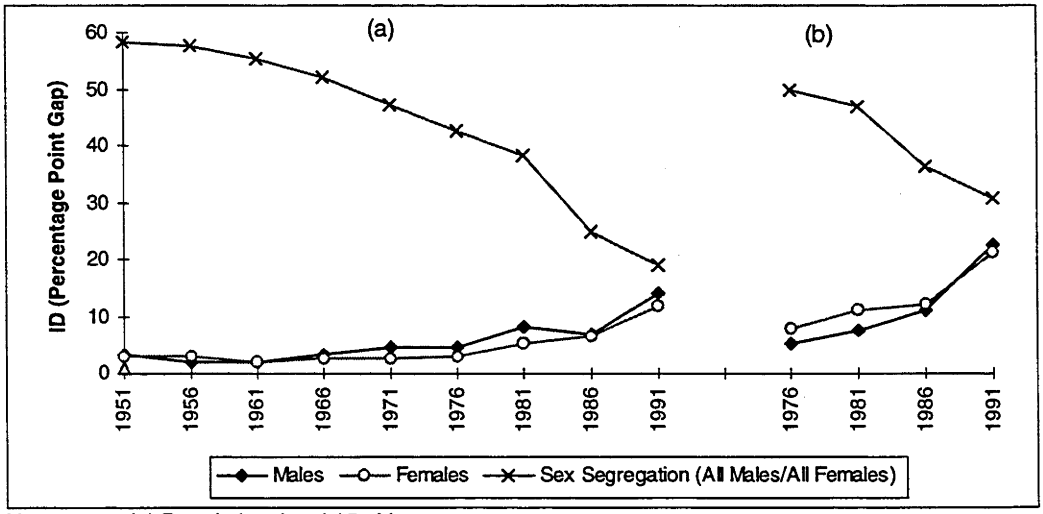
As would be expected, the shift to the younger, working age population increases the proportions of each ethnic group in employment (full-time plus part-time) and decreases the proportions not in employment (unemployed plus not in the labour force). However, for Maori, the difference is minimal, whereas for European it is substantial. The overall result, for both the employed and not employed populations of both sexes, is an even greater increase in inequality than occurred for the population aged 15+ years. When considered in terms of dependency (albeit with the caveats noted in the previous chapters), 55 per cent of all Maori aged 15-64 (males and females combined) were not in employment in 1991, compared with 33 per cent of all European, a ratio of 1.7. In 1951, these indices had been considerably more similar (39 and 32 per cent respectively), a ratio of 1.2.

Table 7.1.1 also gives the proportions working full- and part-time in relation to the total. As these data show, a significant change has taken place in the nature of employment. For males of both ethnic groups, the proportion of the total who are working full-time has steadily declined, although, reflecting the foregoing, considerably more so for Maori than for European. The result is a dramatic decline in male full-time relativity (Maori compared with European), with the ratio falling from 0.95 Maori per European in 1976, to 0.68 in 1991. For males of both ethnic groups there has also been a concomitant and significant increase in the proportion of the total in part-time employment, a nearly three-fold increase for European—accelerating between 1986-1991, and a four-fold increase for Maori, the latter declining slightly during the 1986-1991 period. Nevertheless, as implied earlier, the actual proportions of males concerned remain relatively small, in the vicinity of 5 per cent of each population.

By contrast, the proportions of the total in full- and part-time employment increased overall for European females, albeit with a small decline in the proportion in full-time employment between 1986 and 1991. Between 1976 and 1986, the proportions in both categories also increased for Maori females. However, these trends then reversed, that for full-time employment resulting in an index for Maori females some 19 per cent lower than it had been in 1976, compared with a 14 per cent *increase* for European females, and resulting—as for males—in a dramatic deterioration in Maori to non-Maori full-time relativity, from 0.96 in 1971 to 0.68 in 1991. Importantly, these data also reinforce other arguments (e.g. Davies with Jackson 1994:88) that Maori female labour force participation has never been cushioned by part-time involvement to the same extent as it has been for European females.

In order to summarise these trends over the long term, indices of dissimilarity for both the 15+ and 15-64 year old populations are given in Figure 7.1.4. Set against a substantial decline in inequality by sex, they show a sizeable increase in ethnic inequality that has significant implications both for those within the working age population, and for the youth and elderly populations which the working age populations must support. This is not to say that the burden of support for each ethnic group's dependent members must be fully carried by each ethnic group as an individual entity—indeed, the welfare state assumes a considerable portion of this role, and the situation is even more complex as a result of intermarriage and inter-ethnic partnering. But it is important to acknowledge that the sharp deterioration in relative labour force status since 1976, and thus the likelihood of Maori being disproportionately dependent on the state, appears to reflect factors other than the 'culture of dependency' heavily promulgated by the New Zealand Government since 1991 (Shipley et al. 1991; 'Beyond Dependency' Conference, 1997). Supporting this contention is the substantial deterioration in the proportion of the total in full-time employment experienced by males of *both* ethnic groups, undoubtedly reflecting the impact of the economic restructuring that began in the 1970s.

Figure 7.1.4
Index of Dissimilarity for Labour Force Status: Populations Aged 15+ Years (1951-1991) and 15-64 Years (1976-1991), By Sex and Ethnic Classification

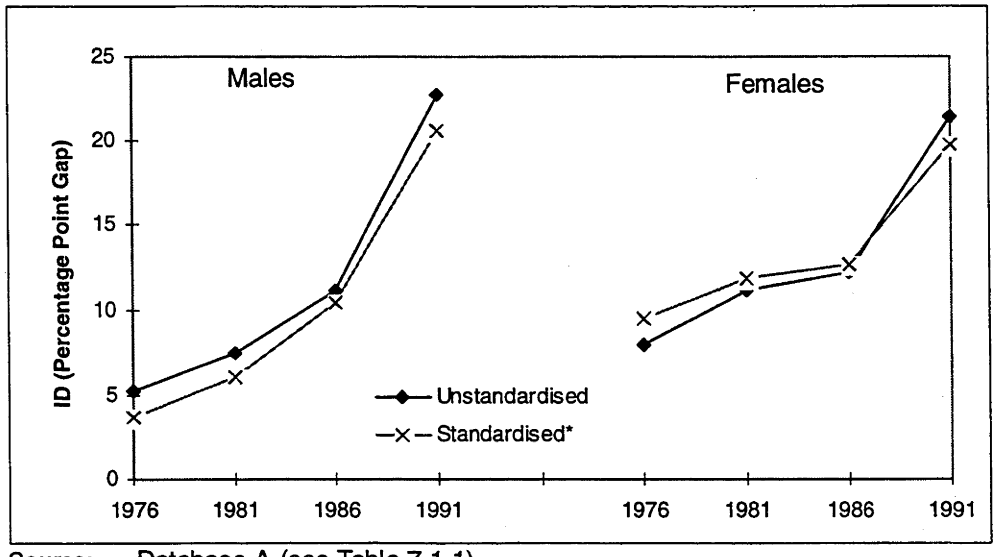


Notes: (a) Population Aged 15+ Years;
1951-1986 denotes Sole/Single Origin Maori; 1991 denotes Maori Ethnic Group;
Non-Maori denotes Total Population minus specified Maori classification;
1951-1981 = Full Time only, 1986-1991 = Full Time + Part Time;
(b) Population Aged 15-64 Years; Maori Ethnic Group and European; Full-Time + Part-Time.

Source: (a) Compiled from Census of Population and Dwellings (see Appendix E.3)
(b) Database A (see Table 7.1.1)

The extent to which ethnic differences in age structure may also be one of these factors is implied in the age-standardised indices of dissimilarity given for the 15-64 year old Maori Ethnic Group and European populations in Figure 7.1.5. For males these indices were slightly lower than their unstandardised equivalents at all observations, whilst for females they were slightly higher between 1976 and 1986, and slightly lower in 1991. In the case of males the disparities indicate that the Maori age structure has been slightly disadvantageous to labour force status, whilst in the case of females it was at first advantageous, and then disadvantageous. That said, for males between 1976 and 1986, the age-standardised indices underwent slightly greater intercensal increases than their unstandardised equalivalents, suggesting that the Maori male age structure over those years gave some protection against the increase in inequality. That is to say, if the Maori and European age structures had been the same, the indices of dissimilarity for males would have been lower, but the increase in inequality between 1976 and 1986 would have been greater. The opposite was the case between 1986 and 1991, suggesting that the Maori male age structure by then played a (very) small role in producing the increase. By contrast, the Maori female age structure contributed to the intercensal increase in inequality at all observations. Thus, overall, it would seem that the Maori age structure has become increasingly disadvantageous to labour force status.

Figure 7.1.5
Comparison of Standardised and Unstandardised Indices of Dissimilarity for Labour Force Status: Maori Ethnic Group and European Populations Aged 15-64 Years, By Sex, 1976-1991



Source: Database A (see Table 7.1.1)

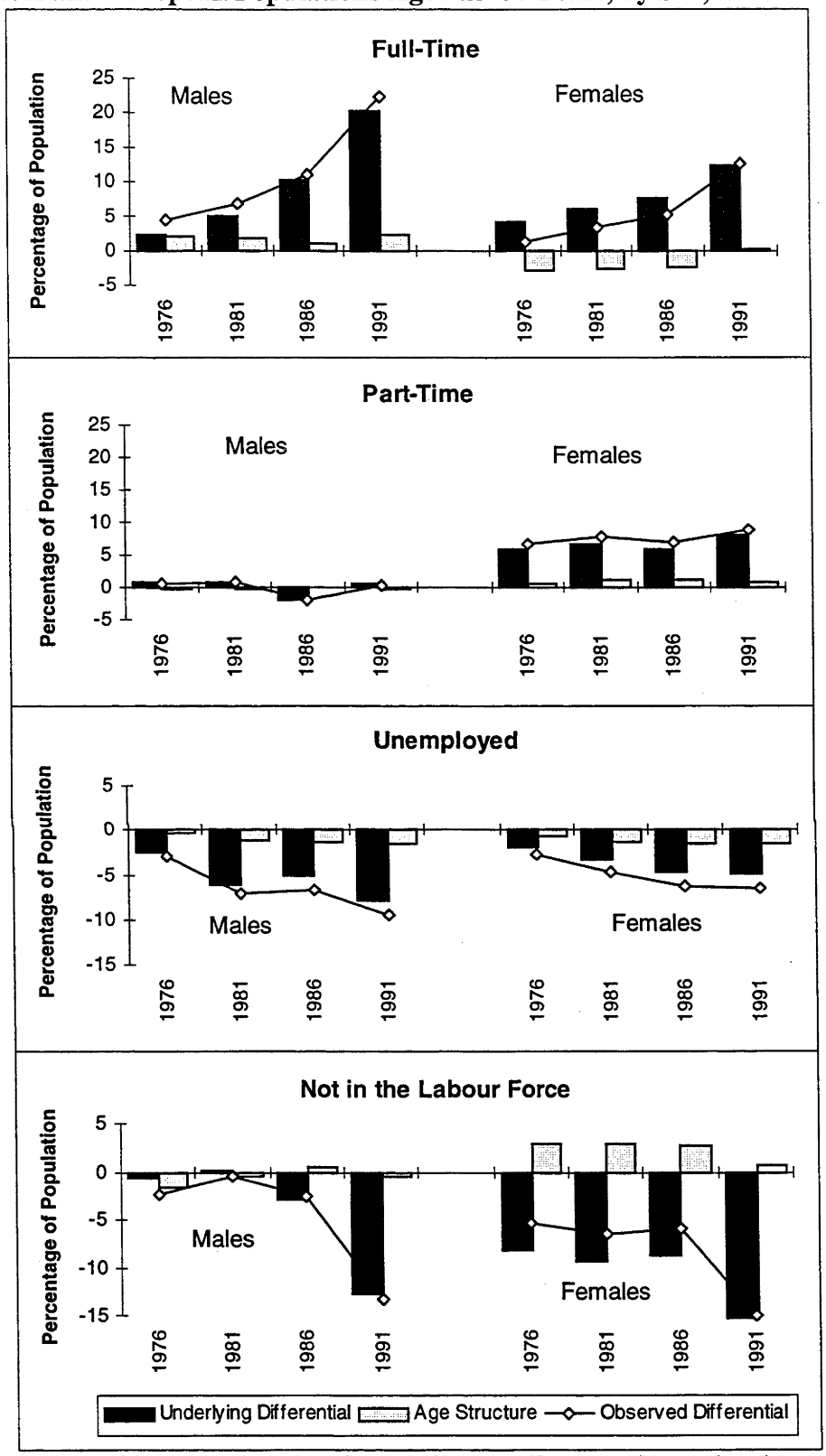
7.1.1 Component Analysis of Labour Force Status:

As implied in Figure 7.1.6, which presents the results of component analysis, age-standardised aggregate indices can be misleading, because they conflate the different and sometimes mutually compensating effects that obtain within each category. Immediately obvious, for example, is that the age-effects for males in the full-time employment and unemployed categories lie on opposite sides of the line denoting unity, and thereby largely cancel each other out. (As with the earlier component analysis of labour force participation, zero denotes unity between the two ethnic groups; positive values denote higher proportions in the category for European, and negative values, for Maori. Note also that the scales differ between the employed and not employed categories.) Indeed, not only do the effects of age structure differ substantially from category to category, but they also do by sex and by year. In some cases, where both components lie on the same side of zero, they have an additive effect, augmenting the underlying (true) differential (and thereby adding to ethnic stratification), and in others, where they lie on different sides (as occurred with the analysis of labour force participation *per se*), a partial offsetting effect, thereby concealing the extent of the underlying 'advantage' or 'disadvantage' and causing ethnic stratification to be less than it would be if the two age structures were the same. The former patterns are particularly evident for males in full-time employment, females in part-time employment, and the unemployed of both sexes. The latter patterns are similarly evident for females in full-time employment between 1976 and 1986, and not-in-the-labour-force females at all observations.

Within these generalities, however, there is considerable variation in terms of which population 'gains' or 'loses' from the effects of age structure. In the categories exhibiting additive effects, the European age structure consistently added to the proportions—and ostensibly the advantage—of European males in full-time employment, and of European females in part-time employment.[4] Similarly, the Maori age structure consistently added to the proportions—and ostensibly the disadvantage—of unemployed Maori of both sexes. In 1976, 1981 and 1991 it also added (very slightly) to the proportions of Maori males in the 'not in the labour force' category, a finding suggestive of a negative interpretation when the lower proportions of Maori undertaking

[4] The Maori age structure also conferred a small advantage on Maori males in part-time employment in 1976, 1981, and 1991, but the category pertained to such small proportions of males that the effects must be deemed non-significant.

Figure 7.1.6
Component Analysis of Ethnic Differentials in Labour Force Status, Maori and European Populations Aged 15-64 Years, by Sex, 1976-1991



Notes: Employed (Full-time, Part-time) and Not Employed (Unemployed, Not in the Labour Force) on different scales.

Source: Database A (see Appendix E.4)

post-compulsory education are factored in (an issue addressed in Chapter 9). In the two categories exhibiting fairly consistent offsetting effects, a feature which primarily affected females, age structure conferred, on the one hand, an advantage to the proportion of Maori females in full-time employment between 1976 and 1986—thereby partially concealing the underlying advantage of European females; and on the other, an ostensible disadvantage (if earnings potential is considered an outcome) to the proportion of European females who were not in the labour force—thereby partially concealing the underlying disadvantage of Maori females.

So too there is considerable variation in the contribution to the observed differentials for each category made by the age-effect across time. The peak age-effect in the unemployed category, for example, occurred for males in 1986, when age structure accounted for 22 per cent of the observed differential, and for females in 1981, when it accounted for 28 per cent, whilst by 1991 these proportions had fallen to 17 and 25 per cent for males and females respectively. However, these *relative* proportions are seriously affected by changes in the size of the denominators (the observed and/or underlying differentials), and can thus be misleading if viewed as functions of age structure *per se*. That is to say, because the age structures of the two populations are slowly converging, the expectation would be that, if the underlying differentials remained unchanged, the age-effects would show a steady decline. In some cases, however, the age structure effects decline because the underlying differentials increase, and vice versa. The effects of age structure in each category should thus not be read as implying 'trends' *per se*, but rather as indicating the extent to which age structure contributes to, or ameliorates, the underlying differential at each individual observation.

This is particularly so in the case of the proportion of males who were employed full-time, for whom ethnic differences in age structure in 1976 accounted for nearly one-half of the observed differential (of 4.5 percentage points), and in 1991, for just on 10 per cent, but of a much larger observed differential (of 22.5 percentage points). As Figure 7.1.6 shows, the actual percentage points accounted for by age structure in fact changed very little across the period, although it should be noted that they did increase between 1986 and 1991.

Similarly, for the proportion of females in full-time employment, the effect of age structure in 1976 *offset* the underlying differential (of 4.3 percentage points) by approximately two-thirds. By 1986 this effect was less than one-third, but, as above, it pertained to a considerably larger underlying differential (of 7.6 percentage points). At

both observations, therefore, ethnic stratification for females who were employed full-time was reduced by the effect of age structure, whilst in 1991 the age-effect shifted to a small European advantage, thereby deriving a very small (2 per cent) additive effect and very slightly adding to ethnic stratification. For females who were not in the labour force, the effects of age structure (which accrued to European) similarly reduced ethnic stratification between 1976 and 1986 by approximately one-third, and in 1991 by only 4 per cent, but again of a considerably enlarged underlying differential, which at all observations 'favoured' Maori.

Whilst there is little about the findings for unemployment *per se* that is surprising (and indeed, that has not already been broadly acknowledged, if seldom quantified), the findings in general reveal two important factors. First, it is of interest that the Maori age structure until (and including) 1986 conferred an advantage on the proportion of Maori females in full-time employment, but not on the proportion of Maori females in part-time employment at any observation, where it might have been expected; nor on the proportion of Maori males in full-time employment at any observation. These patterns suggest that females employed part-time have been, until recently, somewhat older on average than those employed full-time, whilst the opposite appears to have been the case for males, evidenced by the fact that Maori males gain no advantage from age structure in relation to the proportion in full-time employment, but a minute advantage in the proportion in part-time employment. Thus, although more so for males, these findings run counter to the impression—ostensibly reinforced earlier in Figure 7.1.1—that the youthful age structure of the Maori population is advantageous to labour force participation in general. Instead, for males, that 'advantage' has been almost solely due to the unemployed component of labour force participation, whilst for females it has until recently been a combined effect of unemployment plus full-time employment (even though the latter did not result in higher proportions of Maori than European in full-time employment *per se*), but in 1991 it was solely due to unemployment.

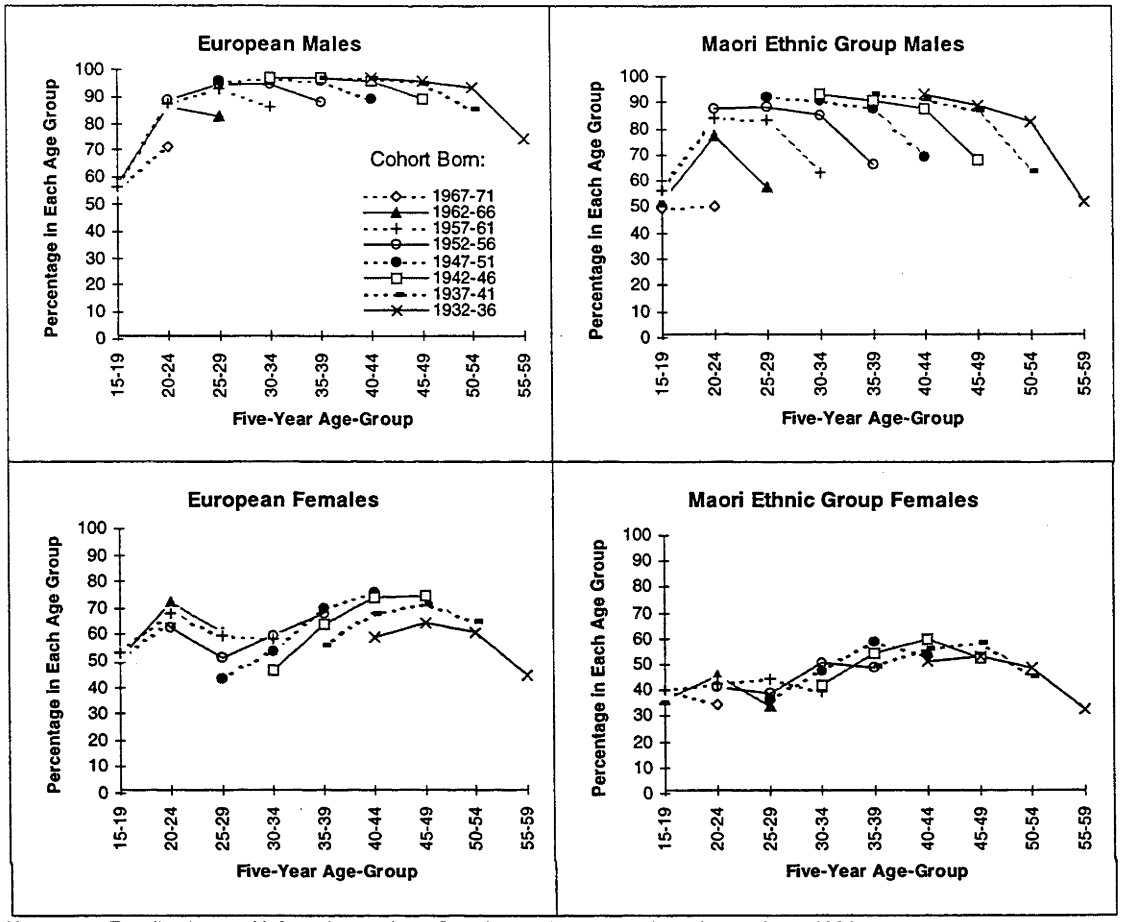
Second, as noted, the effects of age structure do not themselves fluctuate in the manner implied, and thus their generally declining 'trends' highlight changes in the base-lines against which they are counterpoised. Where, for example, the component due to age structure for males in full-time employment declined from one-half of a small differential in 1976, to 10 per cent of a much larger differential in 1991, the patterns simultaneously reveal a dramatic increase in underlying inequality. Moreover, this increase in underlying inequality is evident in all labour force categories.

7.1.2 Cohort Analysis of Labour Force Status:

These suppositions are confirmed when cohort trends in the age-specific data that underlie the foregoing are reviewed. Trends in the proportion of each total age group in employment (full-time plus part-time) are given first separately for each ethnic group (Figure 7.1.7), and then in terms of ethnic relativities (Figures 7.1.8 and 7.1.9). (Trends for the proportion of those *not* in employment, that is, unemployed plus not in the labour force, are the obverse of this index, and are therefore not presented.) Importantly, it must be remembered that age-specific/cohort measures essentially identify the *probability* of being in a certain labour force status (or any other category), rather than the impact of that finding on each population as a whole, which requires concomitant consideration of age structure as in the above component analysis. The reason for turning to cohort analysis is that it permits significant changes in intra- and inter-cohort experiences across the life cycle to be identified (that is, whether or not the above noted trends are universal or cohort-specific). It also permits examination of the extent to which trends across the life cycle show evidence of lag effects, whereby, for example, low levels of employment at one age (e.g. at 15-24 years, as a result of participation in tertiary education) may be made up at a later age.

Figure 7.1.7 shows that there is indeed evidence of an employment-entry lag effect between ages 15-19 and 20-24 for all cohorts born 1957-1966, irrespective of sex and ethnicity, but this has been greatly reduced for the European cohorts born 1967-1971, and has not occurred at all for the youngest Maori cohorts. Instead, in a significant departure from earlier patterns, the employment to population ratio for 20-24 year old Maori males born 1967-1971 remained the same as at 15-19 years, whilst for Maori females it declined slightly. Another type of lag effect—this one reflecting the effects of childbearing and childrearing—is also evident for females of both ethnic groups, although it is considerably dampened down for Maori females. That is to say, the 'M'-shaped curve typically associated with female labour force participation is much less pronounced for Maori, with employment over the labour force entry years much lower but more consistent than for European, a probable reflection of the considerably earlier childbearing of the former (an issue addressed in Chapter 11), although no direction of causality should be inferred.

Figure 7.1.7
Employment to Population Ratios: Percentage of Each Total Age Group in Employment (Full-Time plus Part-Time), by Sex, Ethnicity, Cohort and Age, 1976-1991



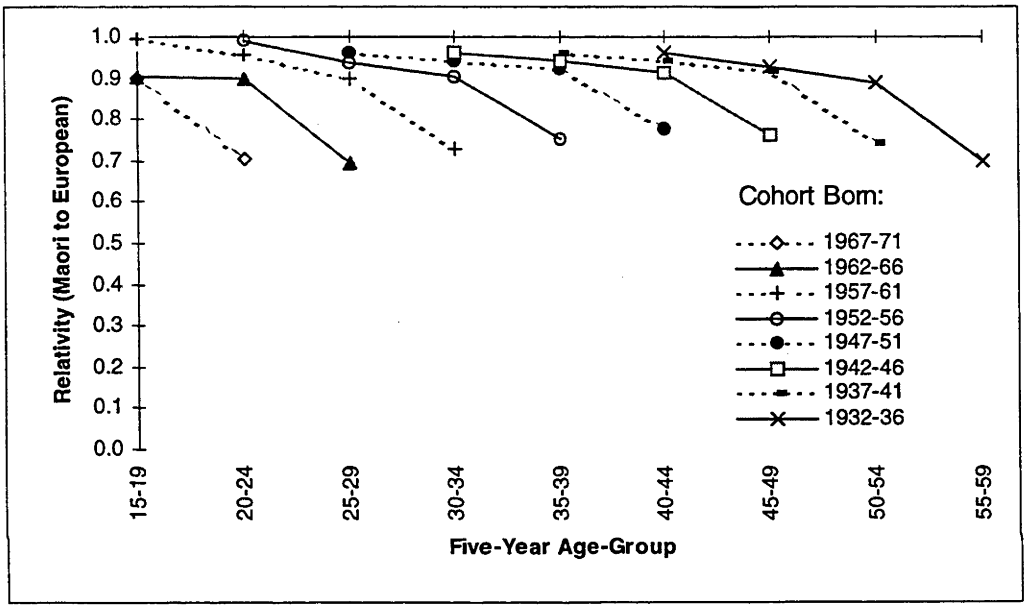
Notes: For all cohorts with four observations, first observation = 1976, last observation = 1991
Source: Database B (see Appendix E.5.2)

Figure 7.1.7 also shows that the employment to population ratio has fallen for all male cohorts when at the same age as their predecessor, irrespective of ethnicity, although the effect is considerably more marked for Maori. Furthermore, for males of both ethnic groups, the greatest decline occurs across the last age span shown, which corresponds to the 1986-1991 period. For females, on the other hand, employment for each successively younger cohort is generally higher at each age, although this effect is considerably more marked for European.

When these data are re-examined as proportionate ratios (relativity) between ethnic groups, as in Figure 7.1.8 for males, a substantial increase in ethnic inequality can be seen to have occurred for all cohorts. Especially notable is the fact that this increase occurred from near-unity in 1976 (the first data point for each cohort). Furthermore, the

decline is inversely related to year of birth: the younger the cohort, the greater the inequality when at the same age as the predecessor cohort. That said, the universality of the trends clearly indicate that the causes are not endogenous to any specific cohort, but instead reflect period effects which slowly gathered momentum between 1976 and 1986, and accelerated between 1986 and 1991.

Figure 7.1.8
Maori Ethnic Group-European Relativity in Percentage of Each Total Age Group in Employment (Full-Time plus Part-Time), by Cohort and Age, Males, 1976-1991

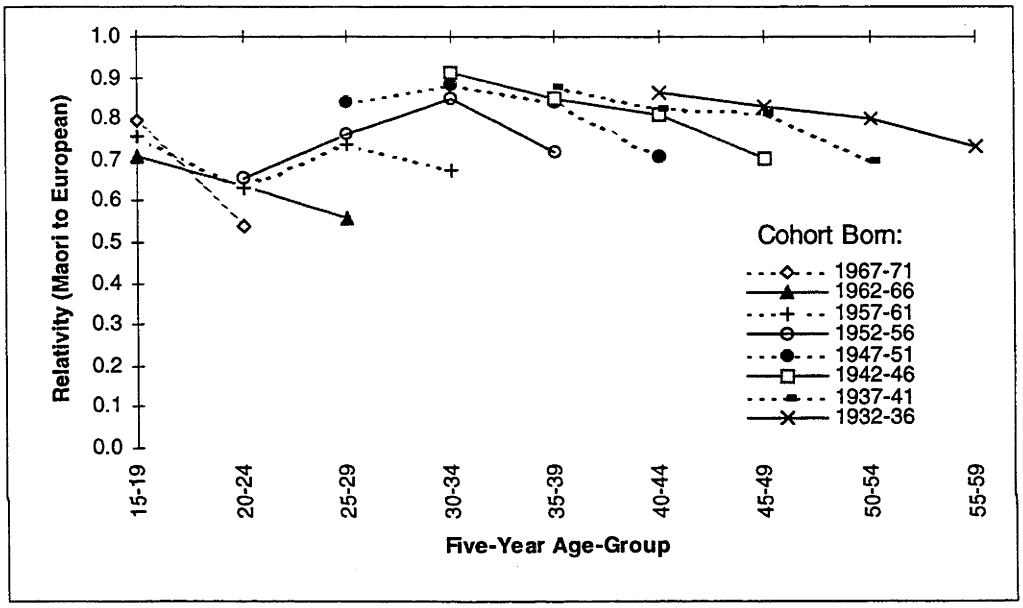


Notes: For all cohorts with four observations, first observation = 1976, last observation = 1991.
Source: Database A (see Appendix E.5.2)

Figure 7.1.9 shows that trends have been very similar for females, albeit patterns over the key childbearing and childrearing years vary accordingly. For example, where trends for the cohorts born 1952-1956 and 1957-1961 show an initial improvement in employment relativity as the key childbearing and childrearing years are passed, reflecting the patterns for the females of each ethnic group shown in Figure 7.1.7, this upward movement is curtailed five years earlier for the latter born cohort, whilst no improvement occurs at all for the cohort born 1962-1966. Furthermore, with the exception of trends at 15-19 years of age, all female cohorts have experienced lower employment relativity than their predecessor when at the same age, as was the case for males. Aside from the effects of the childbearing and childrearing period, which see the

highest levels of ethnic inequality for females corresponding with the peak childbearing years, the only major difference between the trends for males and females is that for females the decline across the life cycle began from a generally lower level of equality than for males, and although reaching similar levels of inequality to males in 1991, did not, therefore, fall by the same magnitude.

Figure 7.1.9
Maori Ethnic Group-European Relativity in Proportion of Each Total Age Group in Employment (Full-Time plus Part-Time), by Cohort and Age, Females, 1976-1991



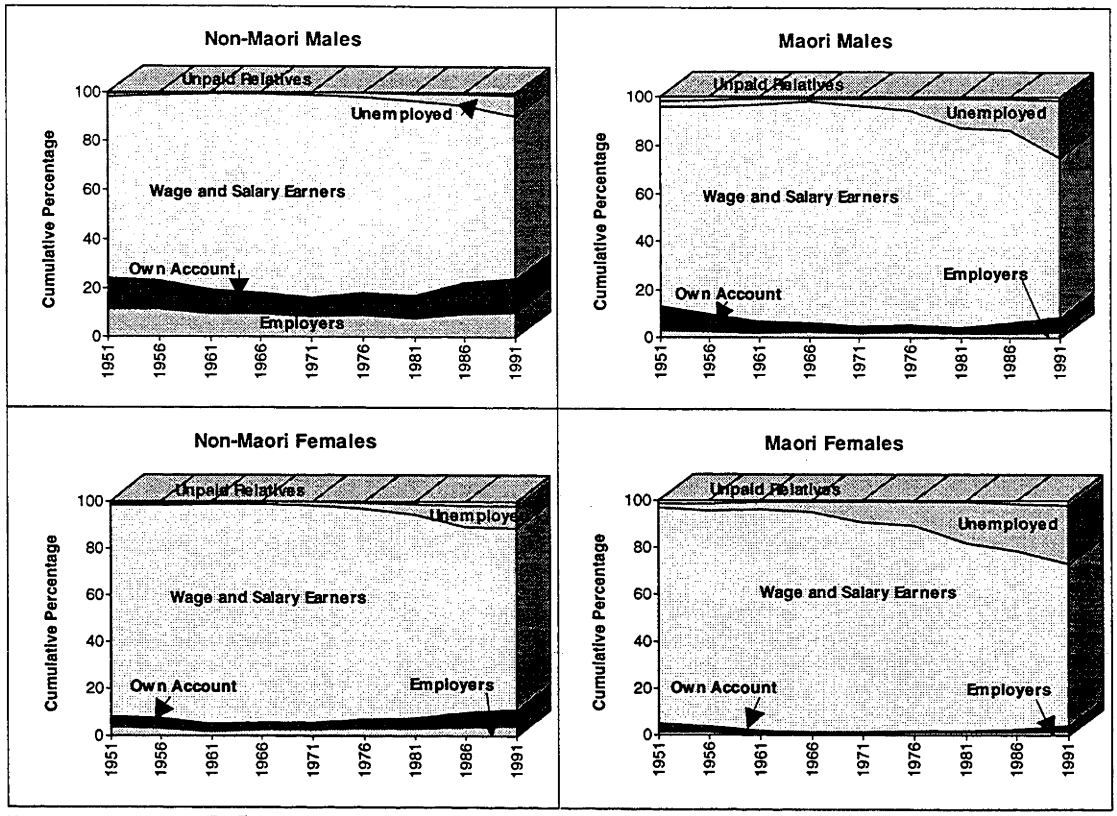
Notes: For all cohorts with four observations, first observation = 1976, last observation = 1991.
Source: Database A (see Appendix E.5.2)

7.2 EMPLOYMENT STATUS IN RELATION TO THE LABOUR FORCE

The chapter now turns to the analysis of ethnic differentials in employment status within the labour force (see Thompson 1985 for a review up to and including 1981), and to the role of age structure and cohort trends in these differentials. First, an overview of aggregate trends for the period 1951-1991, given in Figure 7.2.1, shows that for both ethnic groups and both sexes, the most significant category has been and remains wage and salary earner, although a recent and substantial decline in its dominance is also immediately apparent, and more so for Maori than non-Maori.[5]

[5] Historical trends in employment status are available only for the Maori and non-Maori populations aged 15+ years. Nor was employment status included in Database A or B.

Figure 7.2.1
Percentage of Labour Force Aged 15+ Years in Each Employment Status, by Sex and Ethnic Classification, 1951-1991



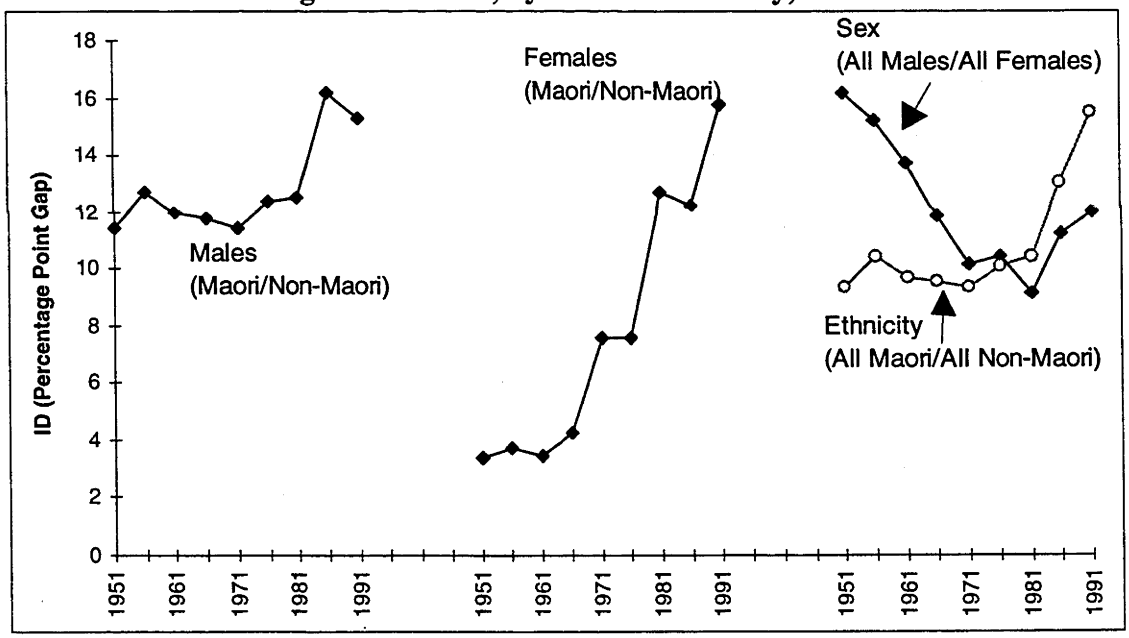
Notes 1951-1981 = *De Facto* population, 1986-1991 = *De Jure* population.
1951-1981 = Full Time Labour Force, 1986-1991 = Full Time plus Part Time.
1951-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group.
Non-Maori = Total population minus specified Maori classification.
Source: Compiled from the *Census of Population and Dwellings*, various years (see Appendix E.6).

In 1951, Maori males were considerably more likely to be wage and salary earners than non-Maori males (9 percentage points difference), whilst by the end of the period the respective proportions were identical, at 66 per cent. Maori females also began the period with higher proportions in this category than non-Maori females, but ended 8 percentage points lower. This finding reflects the considerably greater extent to which unemployment has eaten into the distribution for Maori in recent years, and the considerably greater proportions of non-Maori of both sexes either working on their own account (self employed, no employees), or employing others, compared to Maori. Furthermore, for non-Maori, the larger of these two categories—working on own account—has seen an overall increase for both sexes, whilst for Maori its share has declined.

Figure 7.2.2 summarises these trends as indices of dissimilarity, again identifying a substantial increase in ethnic inequality set against an equally substantial decline in

inequality by sex—albeit the latter simultaneously showing an increase between 1981 and 1991. The increase in ethnic inequality is particularly marked for females, who started the period with much lower inequality than males, but ended slightly above. In 1951, 3.4 per cent of Maori females would have needed to change employment status for their distribution to have equated to that of non-Maori females. By 1991 this proportion was 15.8 per cent, an almost five-fold (4.6 times) increase. The index for males in fact stayed more or less the same across most of the period, but then increased substantially between 1981 and 1986. It then declined slightly, but in 1991 remained almost one-third higher than in 1951. The overall result, by the end of the period, was that total ethnic inequality (all Maori/all non-Maori) had overtaken total sex inequality (all males/all females) as the leading form of inequality.

Figure 7.2.2
Indices of Dissimilarity for Employment Status: Maori and Non-Maori Labour Forces Aged 15+ Years, by Sex and Ethnicity, 1951-1991



Notes 1951-1981 = *De Facto* population, 1986-1991 = *De Jure* population.
1951-1981 = Full Time Labour Force, 1986-1991 = Full Time plus Part Time.
1951-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group.
Non-Maori = Total Population minus specified Maori classification.

Source: Compiled from *Census of Population and Dwellings* (see Appendix E.6).

The extent to which the increase in the indices of dissimilarity between 1981 and 1986 may reflect ethnic differences in age structure, which are examined below, and the inclusion of part-time employment in the data from (and including) 1986, must be acknowledged. However, at least in terms of the latter, the trend toward greater

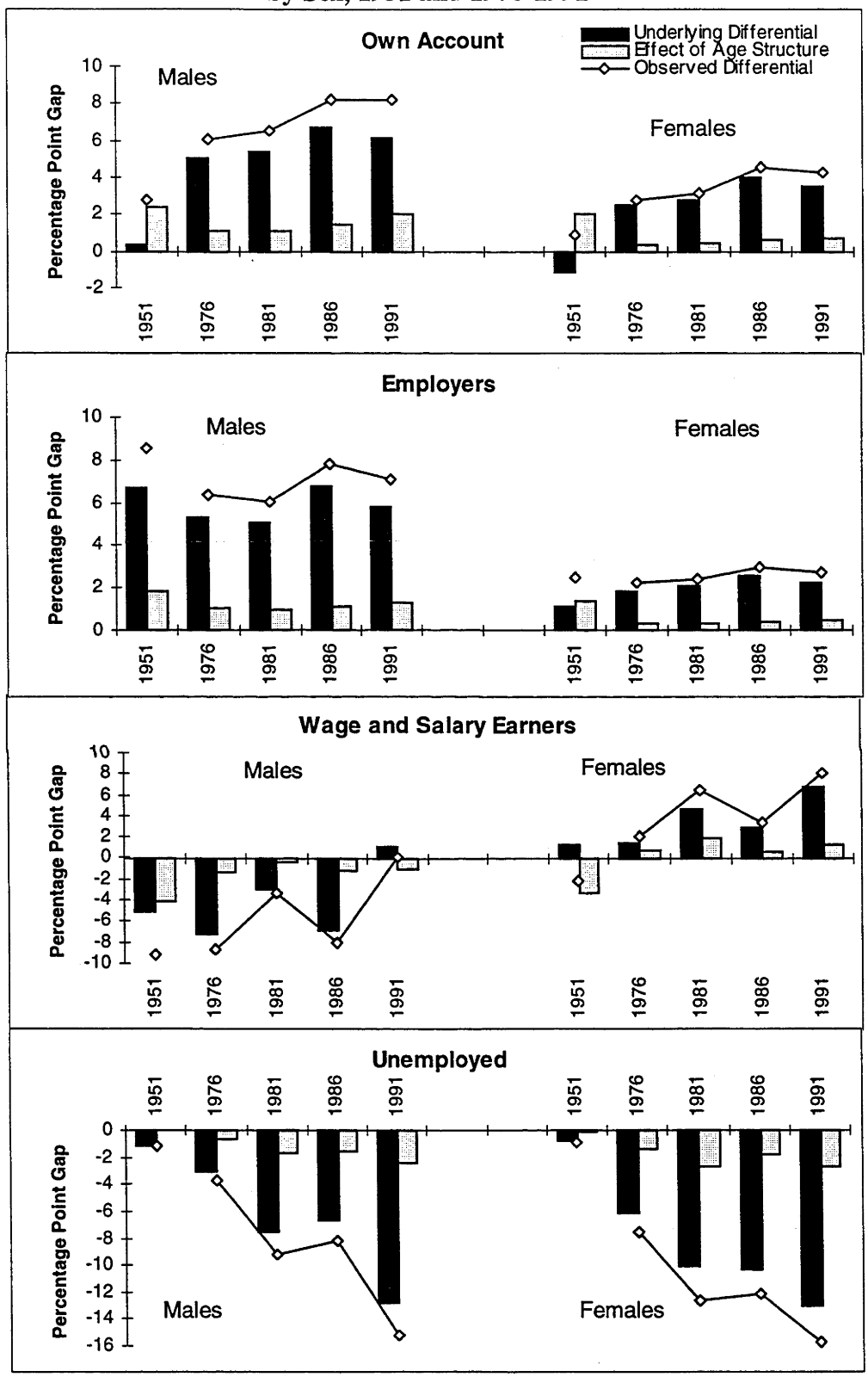
inequality was already well underway prior to 1986. Furthermore, at least for males, the inclusion of part-time data, noted above as pertaining to just on 5 per cent of males of both ethnic groups, would have made very little difference to the results.

7.2.1 Component Analysis of Employment Status:

In presenting the results of component analysis, Figure 7.2.3 shows that age structure has had a generally additive effect within each employment status category. That is to say, in almost all cases the observed differentials are greater than the underlying differentials, having been inflated by the effects of age structure, and thus ethnic stratification has been exacerbated by the latter—albeit in some cases only slightly. The only exceptions obtain for females in the 'own account', 'wage and salary', and 'relative assisting unpaid' categories in 1951, and for males in the two latter categories in 1991, when the effects of age structure acted to offset—or ameliorate—the underlying effect of ethnic stratification. (Data for the proportionately very small 'relative assisting unpaid' category are not shown, but in general can be understood to derive patterns and trends very similar to those for the 'wage and salary earner' category. See Appendix E.7).

As in the previous component analysis, there are also substantial period-, sex- and category-dependent differences in the ethnic group to which the 'advantage' or 'disadvantage' from age structure accrues, and in the magnitude of the age-effect at each observation. In the 'own account' and 'employer' categories, for example, the effects of both age structure and underlying differentials favour non-Maori of both sexes at all but the one observation noted above (females in 1951), and these effects are generally more marked for males than females. In these categories, age structure in 1991 accounted for 25 and 18 per cent respectively of the observed differentials for males, and for 17 per cent of the observed differentials in both categories for females. In each case these proportions are slightly greater than they were in 1986—in part because of small declines in the underlying differentials—but somewhat smaller than they were in 1951, when the age-effect for males in the 'own account' category was several times greater than the tiny underlying differential, and for females in that category had completely offset the underlying differential. Similarly, in the 'employer' category, age structure in 1951 had accounted for more than one-half of the observed differential for females and for more than one-fifth of that for males, the underlying differential in the former case being half its magnitude in 1991, but in the latter case, slightly larger.

Figure 7.2.3
Component Analysis of Ethnic Differentials in Employment Status (Selected Categories) for Maori and Non-Maori Labour Forces Aged 15+ Years, by Sex, 1951 and 1976-1991



Notes: Different Scales
1951-1981 = Full Time Labour Force, 1986-1991 = Full Time plus Part Time.
1951-1986 = Sole/Single Origin Maori, 1991 = Maori Ethnic Group;
Non-Maori = Total Population minus specified Maori classification.

Source: Compiled from *Census of Population and Dwellings* (see Appendix E.7).

By contrast, in the 'unemployed' category—essentially reflecting the earlier analysis for the population aged 15-64 years[6]—both the effects of age structure and underlying differentials consistently accrued to Maori of both sexes. Age structure in 1991 accounted for 16 percent of the observed differential for males, and 17 per cent for females, in both cases a little greater than in 1951, when the underlying differentials had been very much smaller, suggesting a true overall increase in the role of age structure in producing the observed differentials. Indeed, in 1951, age structure had no effect on ethnic differentials in unemployment for males.

In the 'wage and salary earner' category, a different situation obtains for each sex, both sets of differentials (underlying and age-structural) tending to favour Maori males, but non-Maori females. As above, however, the effects remain generally additive, inflating the observed differentials and adding to ethnic stratification, exceptions occurring only in 1951 for females, and in 1991 for males. At these observations, the effects of age structure either completely offset the relatively small underlying differentials (in the case of females), or almost did so (in the case of males). For female wage and salary earners in 1951, the net effect (the observed differential) implies a small Maori advantage, whereas the underlying differential favours non-Maori. For males in 1991, the observed differential implies exact unity, whereas the underlying differential shows a non-Maori advantage.

Thus, and whilst acknowledging that age structure shows a generally declining effect (albeit this magnitude reflecting a changing base-line), its role in producing the ethnic differentials in employment status cannot be ignored. Analysis of eth-class in New Zealand (e.g. Wilkes, Davis, Tait and Chrisp 1985:25-26) for example, needs to acknowledge that close to one-fifth of the ethnic differentials for the *Bourgeois* and *Petit-Bourgeois* categories are currently accounted for by ethnic differences in age structure, and that observed differentials do not always identify the group with the underlying advantage. Reliance on the observed differential for 'own account' females in 1951, for example, would conceal the fact that at the time it was Maori females who held the advantage. Similarly, continued reliance on that index would conceal the true extent to which that advantage has since shifted to non-Maori females. Indeed, the finding raises the question as to when and how the advantage was lost. Probably it

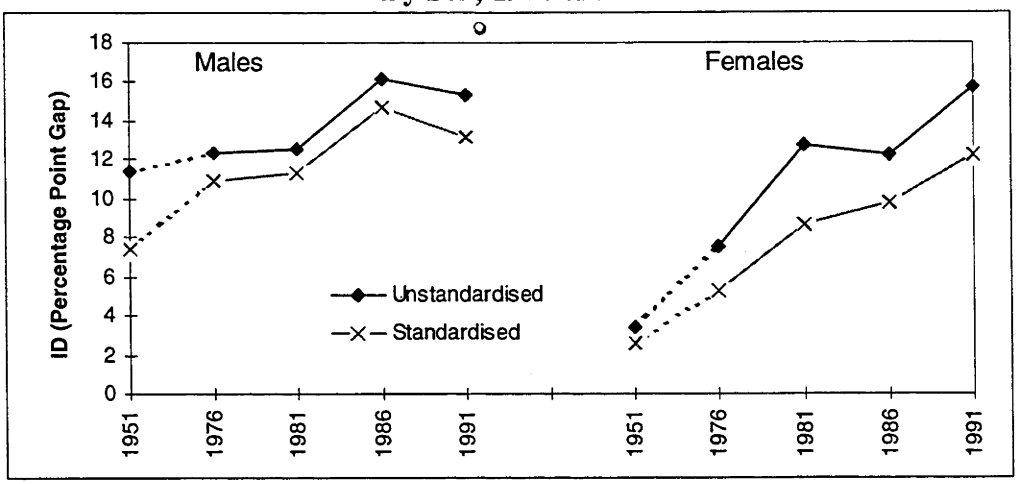
[6] However, the values differ because the former analysis was concerned with the unemployment-population ratio for the Maori Ethnic Group and European populations aged 15-64 years, whilst the present analysis is concerned with unemployment as a proportion of the labour force for the Maori and non-Maori populations aged 15+ years.

reflects the more rural and semi-subsistence orientation of Maori in the 1950s, an issue that is addressed in the following chapter.

As argued earlier, it is also important to keep in mind the size of the underlying differential at each observation. An ostensibly declining contribution from age structure may simply occur due to an increase in the underlying differential, a shift that may have even more unfavourable implications. For example, although there is a definite decline in the underlying differentials in the 'own account' and 'employer' categories between 1986 and 1991 for both sexes, for all but male employers the differentials in 1991 were considerably greater than they had been in 1951, whilst in the latter case they were only fractionally lower. As was the case with labour force status, this increase in underlying inequality is similarly evident in all but one other employment status category—that of male wage and salary earners. In the male wage and salary earner category, however, an additional factor is operating. As explained earlier, this is that the ostensible achievement of equality within the category reflects the relatively increased proportions of non-Maori males in the own account category, assisted by their lower proportions in the unemployed category.

Whilst acknowledging that the various age-effects shown in Figure 7.2.3 become conflated when aggregated, Figure 7.2.4 summarises the effect of age structure on the indices of dissimilarity for employment status. For both sexes, and at all observations, the age-standardised indices are lower than their unstandardised equivalents, indicating that the Maori age structure has been disadvantageous to employment status. Trends in the two indices also show that this disadvantage increased between 1986 and 1991. However, for males until 1986, the intercensal increase in inequality was greater for the age-standardised indices than for their unstandardised equivalents, indicating that the Maori male age structure initially (in 1951) gave some protection against the underlying difference (i.e. it did not contribute to the increase). This protective role was lost between 1951 and 1976. Later, between 1986 and 1991, both indices declined, but the age-standardised indices declined more than their unstandardised equalivelents. For females, by contrast, the intercensal increase in the age-standardised indices was generally smaller than for their unstandardised equivalents (the exception being the 1981-1986 period), the Maori female age structure thus not only becoming increasingly disadvantageous, but also contributing to the increase in inequality across the period.

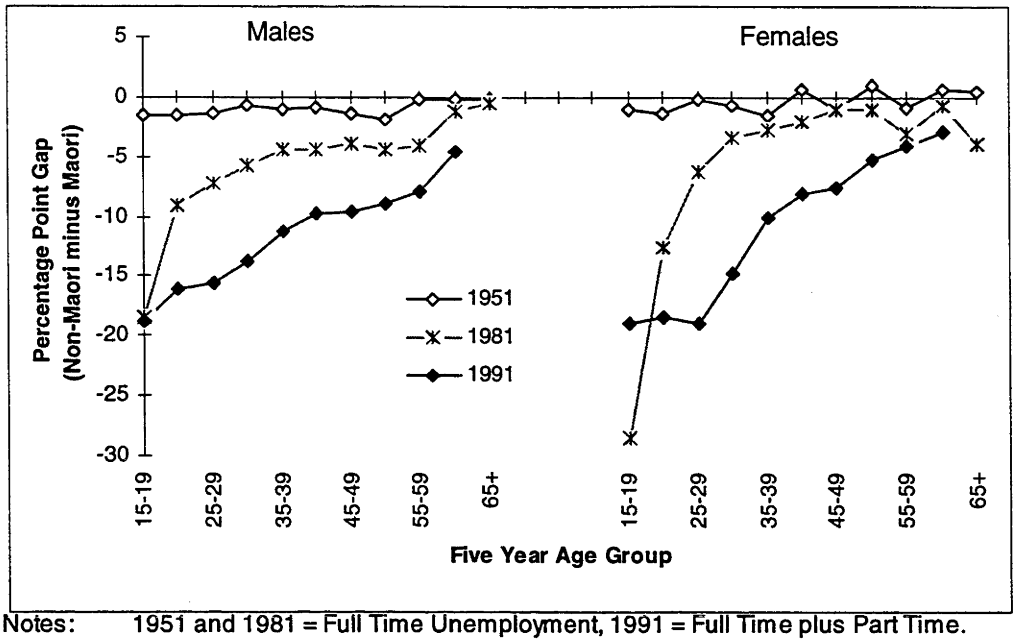
Figure 7.2.4
Comparison of Standardised and Unstandardised Indices of Dissimilarity for Employment Status: Maori and Non-Maori Populations Aged 15+ Years, By Sex, 1976-1991



Nores: 1951-1981 = Full Time Labour Force, 1986-1991 = Full Time plus Part Time.
1951-1986 = Sole/Single Origin Maori, 1991 = Maori Ethnic Group;
Non-Maori = Total Population minus specified Maori classification.
Source: Compiled from *Census of Population and Dwellings* (see Appendix E.7).

Turning now to the age-specific differentials underlying these trends, Figure 7.2.5 shows that the differences between the unemployment rates of Maori and non-Maori have increased dramatically over time. This is particularly so at the younger ages (albeit with the exception of a reduction for females at 15-19 years of age between 1981 and 1991), where the differences are, as implied in the component analysis, compounded by the considerably greater proportions of Maori at younger ages—in 1991, a proportionate ratio of 1.4 Maori per non-Maori at 15-24 years of age (Maori Ethnic Group classification, see Appendix D.3). Importantly, that the decline in equality occurs from near-unity *at all ages* in 1951 must be emphasised.

Figure 7.2.5
Ethnic Differentials (Percentage Point Gap) in Age-Specific Unemployment Rates, Maori and Non-Maori Labour Forces Aged 15+ Years, by Sex, 1951, 1981 and 1991



Notes: 1951 and 1981 = Full Time Unemployment, 1991 = Full Time plus Part Time.
1951 and 1981 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group;
Non-Maori = Total Population minus specified Maori classification.
Source: Compiled from *Census of Population and Dwellings* (see Appendix E.8).

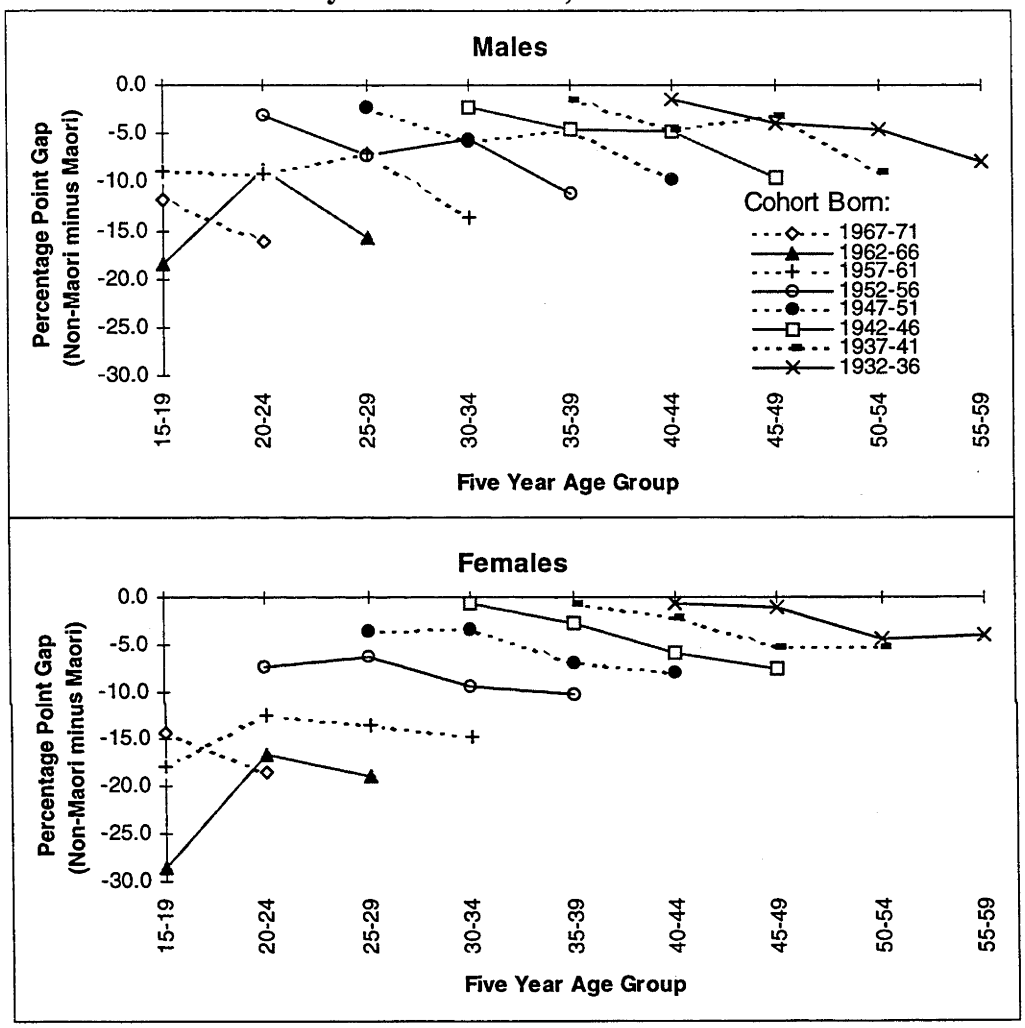
7.2.2 Cohort Analysis of Employment Status:

Reviewed by cohort for the period 1976-1991, as in Figure 7.2.6, the trend away from equality can be seen to have occurred for almost all cohorts and again to be inversely related to year of birth: the younger the cohort, the greater the inequality when at the same age as the predecessor cohort. For males, the trend can be seen to have undergone a general reversal for the age span corresponding to the 1981-1986 period, especially for the youngest cohorts, but then to have resumed its downward trend. The only male cohort to show an overall improvement across the period as a result of this pattern was the cohort born 1962-1966.

For females, improvements occurred during the 1981-1986 period for the cohort born 1962-1966, and during the 1981-1986 period for the cohorts born 1947-1961, but thereafter also began to decline. For the cohorts born 1957-1966, the result across the period was an overall improvement, but all others experienced the overall decline. Again the universality of these trends and patterns strongly indicate the involvement of factors exogenous to the individual cohort, and further highlight the reality of both

unemployment and increasing inequality amongst older cohorts, within which are the parents of the youngest cohorts (see Jackson 1994a).

Figure 7.2.6
Ethnic Differentials (Percentage Point Gap) in Age-Specific Unemployment Rates, Maori and Non-Maori Labour Forces Aged 15+ Years, by Sex and Cohort, 1976-1991

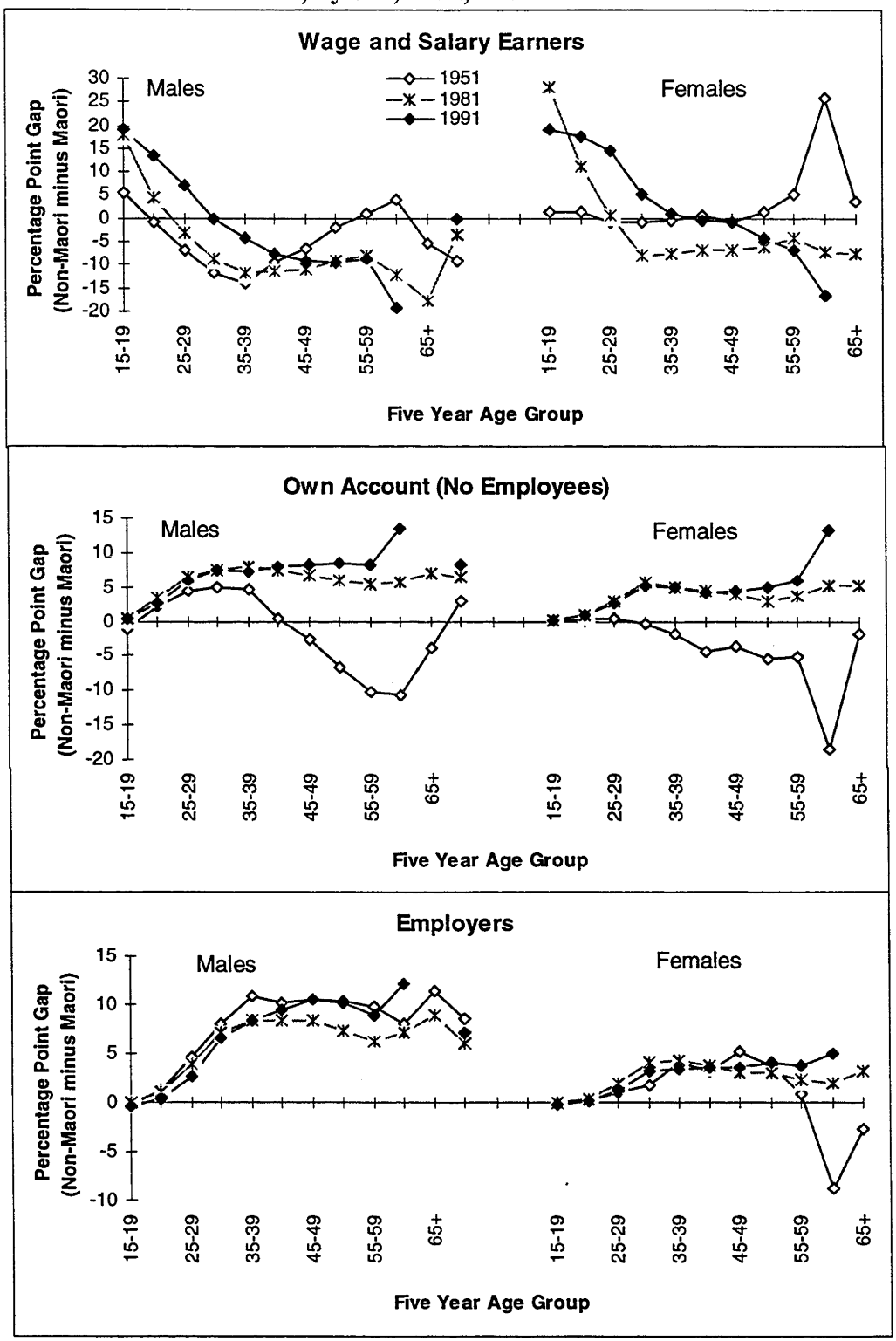


Notes: For all cohorts with four observation points shown, first observation = 1976, last observation = 1991.
1976-1981 = Full-Time Unemployment, 1986-1991 = Full-Time + Part-Time.
1976-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group;
Non-Maori = Total Population minus specified Maori classification.

Source: Compiled from *Census of Population and Dwellings* (see Appendix E.8).

The obverse of the unemployment situation is evident from Figure 7.2.7, which shows differences in the percentage of Maori and non-Maori in the remaining employment status categories (note the exclusion of the very small 'relative assisting unpaid' category, data for which are given in Appendix E.8). Especially notable is that

Figure 7.2.7
Ethnic Differentials (Percentage Point Gap) in Age-Specific Employment Status Rates (Selected Categories), Maori and Non-Maori Labour Forces Aged 15+ Years, by Sex, 1951, 1981 and 1991



Notes: Different Scales.
1951 and 1981 = Full Time Unemployment, 1991 = Full Time plus Part Time.
1951 and 1981 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group;
Non-Maori = Total Population minus specified Maori classification.

Source: Compiled from *Census of Population and Dwellings* (see Appendix E.8).

the above-noted shift from a Maori to a non-Maori advantage in the 'own account' category for females occurs quite universally for middle-aged to older persons of both sexes; and the fact that whilst the 'wage and salary earner' differentials also generally favour middle-aged to older Maori, especially in 1981 and 1991, the patterns again need to be interpreted in light of those favouring non-Maori in the 'own account' and 'employer' categories for the corresponding age groups and years. Clearly, as noted earlier, non-Maori at those ages have relatively lower levels of wage and salary earning because, in combination with lower levels of unemployment than Maori, they have higher levels of working on their own account and/or being employers. Similarly, the lower levels of unemployment for young non-Maori *vis-à-vis* young Maori shown in Figures 7.2.5 and 7.2.6 above correspond with their higher levels in all three categories of Figure 7.2.7, a factor that is especially pronounced in 1991.

As suggested earlier, the shift from a Maori to a non-Maori advantage in the 'own account' category probably reflects the more rural, subsistence-orientation of many Maori in the early 1950s. Indeed, that the advantage occurred across so many age groups, and has been so definitively lost, is strongly suggestive of a shift from a subsistence rather than capitalistic enterprise. However, it may also be a reflection of the very small cell sizes of older Maori in 1951, a factor which may also partially explain the advantage similarly shown for older Maori females in the 'employer' category.

Cohort analysis of ethnic relativities in these remaining employment status categories is not presented, due to the fact that the trends and patterns are very similar to those for the employed population, shown above in Figures 7.1.7-7.1.9.

7.3 SUMMARY

Within the constraints posed by data collection discontinuities and deficits, this chapter examined patterns, trends, and ethnic differentials in labour force status and employment status; the effects of ethnic differences in age structure on those factors; and the extent to which trends in key indicators such as employment and unemployment have been universally experienced by cohorts.

On both indicators, ethnic inequality underwent a substantial increase between the mid-1970s and 1991. Where the data permitted a longer-term view, ethnic inequality was shown to have either increased steadily across the period from a position of near-unity in 1951, or to have experienced an initial decline between 1951 and the 1970s, and

then an increase. Furthermore, ethnic inequality increased against a substantial decline in the index of dissimilarity for sex (all males/all females). By 1991, the former overtook the latter as the leading form of inequality for employment status, whilst inequality between the sexes remained the more important factor for labour force status, but the two indices were rapidly approaching convergence.

Component analysis of the labour force and employment categories comprising these aggregate indicators showed that ethnic differences in age structure, and in the underlying ('true') differentials that remain once the effects of age structure have been accounted for, were highly sex-, period- and category-dependent. In some instances the effects were additive (adding to ethnic stratification), and in others, either partially or fully offsetting, on the one hand concealing the true extent to which one or other population was 'advantaged' or 'disadvantaged', but on the other hand, reducing or ameliorating ethnic stratification. For example, whilst aggregate labour force participation rates appeared a little higher for Maori than non-Maori over much of the period, especially for males, almost all of the apparent advantage was a reflection of (a) the more youthful age structure of the Maori population, and (b) the age-effect deriving from the unemployment category. Indeed, by 1991, the Maori population experienced no employment-related advantage from age structure. Taken together, these findings also substantially altered an initial perspective that ethnic inequality in labour force status was lower amongst females than males.

Component analysis of employment status similarly showed that the younger age structure of the Maori population has caused it to have lower levels of being self-employed or employers, than would be the case if the Maori population had the same age structure as non-Maori. That is to say, in these categories both age structure and underlying differentials favoured non-Maori of both sexes at all but one observation—females in 1951—when an underlying Maori advantage was a probable reflection of self-employment in a semi-subsistence rural economy. In 1991, the non-Maori male age structure accounted for 25 per cent of the observed (crude) ethnic differential in the 'own account' category, and for 18 per cent of that in the 'employer' category. For non-Maori females, the corresponding proportions were 17 per cent for both categories.

By contrast, age-structure had a generally additive (and essentially advantageous) effect in the wage and salary earning category for Maori males, inflating the underlying differentials which also showed a Maori advantage, whilst for females in this category it was non-Maori who generally experienced the additive effects of age

structure and underlying differentials. However, it must be emphasised that the higher underlying levels of Maori male 'advantage' in the wage and salary earner category were also a reflection of the higher proportions of non-Maori males in the self-employed and employer categories, which had in turn reduced participation in the former (the wage and salary earner category). A similar admixture was evident for females, although because female participation in the self-employed and employer categories was somewhat lower than for males, the net result was higher levels of non-Maori than Maori females in the wage and salary earning category.

Across the 1976-1991 period, the age-effect within each labour force and employment status category tended to fluctuate, but overall showed a general decline. However, it must be emphasised that this 'trend' was largely a reflection of an increase in the underlying differentials in almost every category. When age-standardised indices of dissimilarity were compared with their unstandardised equivalents, it was shown that:

> the Maori male age structure was on the one hand disadvantageous to both *labour force status* and *employment status* for Maori males at all observations, and on the other, provided a small degree of protection against the intercensal increase in inequality in each of these indicators between 1976 and 1986. By 1991, however, the Maori male age structure also contributed to the increase in inequality. (That is to say, if the Maori and European age structures had been the same, the indices of dissimilarity would have been lower, whilst the increase in inequality between 1976 and 1986 would have been greater, and between 1986 and 1991, less.);
>
> the Maori female age structure was on the one hand advantageous to Maori female *labour force status* between 1976 and 1986, and in 1991, disadvantageous, and on the other, contributed to the intercensal increase in inequality at all observations. (That is to say, if the Maori and European age structures had been the same, the index of dissimilarity between 1976 and 1986 would have been greater, and in 1991, lower; whilst the overall increase in inequality would have been less.);
>
> the Maori female age structure was disadvantageous to Maori female *employment status* at all observations, and contributed to the intercensal increase in inequality at almost all observations. (That is to say, if the Maori and European age structures had been the same, the index of dissimilarity would have been lower, and the increase in inequality, less.);

However, because these aggregate measures conflate the often mutually-compensating age-effects that obtained within each labour force or employment status

category, these findings must be understood as providing only an approximation of the overall effects of age structure. Certainly for policy purposes, it is the effects within each category that are the more useful. Indeed, in contrast to the comments made at the outset of this chapter, wherein it was proposed that the more youthful age structure of Maori would potentially enhance Maori experience in the labour force and its various employment categories, it appears that the greatest advantages accrue to the older, European population. The findings have implications also for those employ a class-based approach to the study of ethnic stratification. As proposed in the introduction to this thesis, an older age structure is indeed likely to be associated with higher proportions in the employer and self employed (*Bourgeois* and *Petit Bourgeois*) categories, meaning that class-based studies of ethnic stratification need to centrally acknowledge this factor.

Shifting to cohort analysis, the third key index used in this chapter, showed that the overall deterioration in ethnic relativity has affected almost all cohorts, and that the magnitude of the deterioration has been generally inverse to year of birth: the younger the cohort, the greater the ethnic inequality when at the same age as the predecessor cohort. Analysis of the proportion of each age group in employment (full-time plus part-time) across the life cycle showed the only exceptions to these trends pertained to the female cohorts born 1947-61, for whom there was an initial improvement in ethnic relativity as the key childbearing ages were passed. However, in each case this improvement was followed by a deterioration that occurred at an earlier age for each successively younger cohort. Similarly, cohort analysis of unemployment identified increasing ethnic inequality by successive year of birth for cohorts of both sexes, but also showed that all male cohorts experienced either a small improvement or a levelling off in ethnic relativity during the age span corresponding to the 1981-1986 period. A similar pattern also occurred for younger female cohorts during the 1976-1981 period, in the case of both sexes suggesting the involvement of explanatory factors external to the cohort, for example, the impact of employment-related factors and policies occurring within those five-year periods, rather than a change of, for example, work-ethnic within any individual cohort. Indeed, the universality of the trends cannot be seen in isolation from the overall deterioration in employment experienced by members of *both* ethnic groups, although for females this deterioration has been more recent in onset.

Overall, these patterns and trends have significant implications for dependency, typically measured in relation to the population aged 15-64 years. By 1991, more than half (55 per cent) of the Maori population at those ages was not in employment (either

unemployed or not in the labour force), compared with 33 per cent of the European population, a ratio of 1.7 Maori per European. In 1976, these percentages had been 39 and 32 per cent respectively, a ratio of 1.2. This is not to say that each population is responsible for the support of it *own* non-working members, as indeed, much of this responsibility is picked up by the welfare state. Furthermore, given the substantial levels of inter-ethnic marriage and/or partnering in New Zealand, it is somewhat inappropriate to demarcate such boundaries. However, if attention is focussed on the trends, rather than the levels, there can be little doubt that the relative ability of the Maori population to support its extra-welfare state dependency is substantially worse than it was in the 1970s.

The problem is exacerbated by the findings for employment status. In 1991, the proportion of non-Maori males of all ages either working on their own account or employing others was identical to that in 1951 (24 per cent), whilst for Maori males the proportion had fallen by 30 per cent, resulting in a decline in the relativity of Maori to non-Maori males in these two categories from 0.5 to 0.4. For non-Maori females the relevant proportions increased by 40 per cent, but for Maori females fell by 10 per cent, resulting in a decline in relativity from 0.6 to 0.4.

Thus it must be concluded that neither the 'equality' of opportunity proposed at the outset of this chapter, nor the more youthful age structure of the Maori population have assisted in bringing about equality between Maori and non-Maori/European in the general area of the labour force. Instead, those gains that were made during the 1950s and 1960s were lost in the political-economic restructuring of the 1970s and 1980s, whilst the relative youthfulness of the Maori population further contributed to this deterioration through its disproportionate exposure to unemployment. By contrast, the relative maturity of the non-Maori/European population has further reinforced that population's dominance in the more positive areas of labour force participation, especially in full-time employment for males, and in the 'own account' and 'employer' categories for both sexes. Furthermore, the universality of the deterioration in ethnic equality across cohorts of all ages, often from positions of near-unity in 1951, is ample evidence that the Maori population have disproportionately comprised a reserve army of labour, highly employed during the post-war economic boom as proposed, but then ejected from the labour force once the period had past.

8

ETHNIC DIFFERENTIALS IN INDUSTRIAL AND OCCUPATIONAL DISTRIBUTION

8.0 INTRODUCTION

Highly inter-related with ethnic differentials in labour force participation and composition are ethnic differentials in industrial and occupational distribution. Although some attention has been paid to inter-relationships between occupation, age structure, and income differentials (MacRae 1976, Brosnan 1985), little has been paid to the relationship between age structure and occupational or industrial differentials *per se*, even where the focus has been ethnic concentration or 'crowding' (Brosnan 1987).

It is difficult, however, to see how concentration of one or other ethnic group in an industry or occupation can be isolated from the fact that both industries and occupations (see Davies with Jackson 1994:120-122 on female industrial distribution) have distinctive age structures, and that an ethnic group's age structure may therefore predispose it to concentration. Accordingly, this chapter investigates this issue. It outlines historical industrial and occupational differentials in turn, provides an age-profile of each major industrial and occupational category, and submits each category to the decomposition procedures followed in the previous chapter. In this instance the process illustrates the role of age structure in ethnic concentration within each industry and occupation. That is, where either a Maori or European 'advantage' from age structure is shown within any industrial or occupational category, and lies in the same direction as the underlying (underlying) differential, the relative crowding of the affected group is inflated by the effects of age structure; where the two components lie in opposite directions, the underlying level of concentration of one group is either partially or fully concealed (offset) by the age structure of the other group. Due to the large number of categories (8 for industry and 7 for occupation), an age-specific analysis for each category is not undertaken.

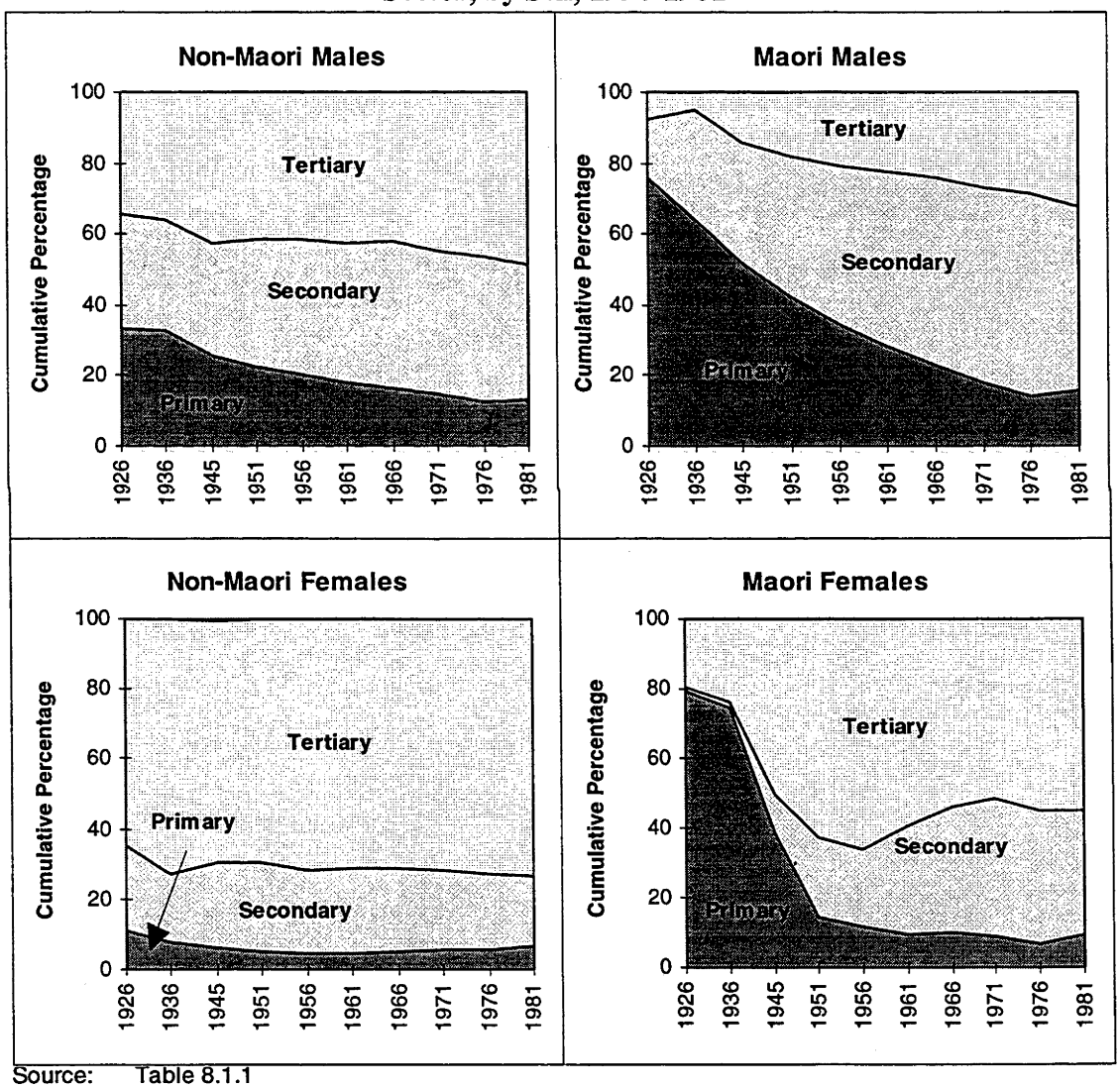
8.1 INDUSTRIAL DISTRIBUTION

Along with its OECD counterparts, New Zealand has made a long term shift from its quarry/primary sector industrial beginnings to dominance in the tertiary/service sector. However, two unique features that separate New Zealand from its counterparts (Thompson 1985:115-128. Easton 1996a) are of particular significance for Maori - non-Maori industrial relations. The first is that, rather than steadily declining in importance, as occurred in other countries, New Zealand's primary sector increased throughout its early history, peaking in 1871 with 56 per cent of the non-Maori work force engaged within it. Thereafter its proportion of the total slowly declined, but along the way went through a number of boom and bust periods which in the aggregate saw high levels of prosperity and capital accumulation for farmers, property owners and their affiliates—disproportionately European. By the 1870s, however, as will be recalled from Chapter 6, the bulk of highly productive Maori land had already passed into European hands, whilst Maori themselves had withdrawn to their remaining rural hinterlands and to subsistence production. By the 1920s, and for a considerable period thereafter, as can be seen from Figure 8.1.1, significant proportions of the Maori population were engaged in the primary sector, but it was a qualitatively different type of engagement, involving small, poor quality, mainly collective holdings, and little more than semi-subsistence production and/or employment as labourers. As a result, the Maori population gained very little of the accumulatory benefits of primary sector attachment.

The second factor is that New Zealand's secondary sector never at any time became its largest sector, dominance passing straight from the primary to the tertiary sector in the early twentieth century. Moreover, despite a relatively long and prosperous post-second world war boom in manufacturing, building and construction (the major secondary sector industries), the dominance of the tertiary sector was reinforced in the late 1960s when New Zealand's external terms of trade turned negative and large numbers of manufacturing enterprises relocated offshore. With considerably larger proportions of Maori than non-Maori males in the secondary sector from 1945, and the same true for Maori females from the late 1950s, the ensuing restructuring of the economy saw Maori disproportionately vulnerable to the changes, not least of which was the increasing level of unemployment noted in the previous chapter. This was especially so for Maori females, who had previously entered the tertiary sector in large numbers, but who had returned to manufacturing during its heyday. That said, it must be

noted that for Maori females, tertiary sector work at that time was disproportionately in the traditional tertiary sector, involving domestic, personal, community and business services, whilst for non-Maori it was disproportionately—and increasingly—in the modern tertiary sector (financial, insurance, retail). It was not until the 1970s, due at least in part to the downsizing of the secondary sector, that the Maori female tertiary sector again began to expand.

Figure 8.1.1
Industrial Structure of the Maori and Non-Maori Workforces, Percentage in Each Sector, by Sex, 1926-1981



Source: Table 8.1.1

With five caveats, Table 8.1.1 updates (and overlaps) these data for the 1976-1991 period. The caveats are a shift: in ethnic classification from Sole/Single Origin Maori and non-Maori to Maori Ethnic Group and European; in the industrial categories

comprising each sector; from the workforce aged 15+ years to that aged 15-64 years; from the full-time workforce to full-time plus part-time; and from data which, with the exception of 1926, are presumed to exclude 'industry not specified' cases, to data that do exclude such cases.

Table 8.1.1
Industrial Structure of the Maori and Non-Maori/European Workforces, by Sex and Ethnic Classification, and Index of Ethnic Dissimilarity, by Sex, 1926-1991

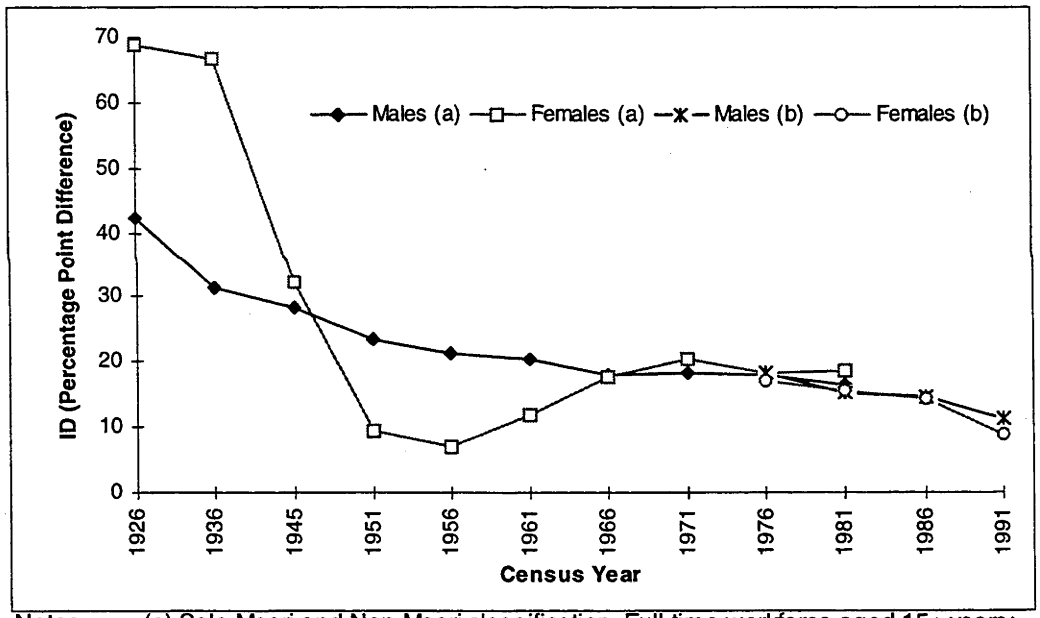
	Non-Maori/European			Maori			
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	ID
			MALES (a)				
1926	33.4	32.2	34.4	75.7	16.6	7.7	42.3
1936	32.7	31.4	35.9	64.0	31.0	5.0	31.3
1945	25.6	31.9	42.5	52.1	33.6	14.3	28.2
1951	22.6	36.1	41.3	41.9	40.2	17.9	23.4
1956	20.2	38.0	41.8	34.3	45.2	20.5	21.3
1961	18.2	39.1	42.7	28.6	49.1	22.3	20.4
1966	16.5	41.5	42.0	23.0	53.0	24.0	18.0
1971	14.5	40.7	44.8	18.3	55.1	26.6	18.2
1976	12.7	41.0	46.3	14.0	57.7	28.3	18.0
1981	13.1	38.2	48.7	15.9	51.9	32.2	16.5
			MALES (b)				
1976	13.2	48.0	38.7	13.9	65.7	20.5	18.3
1981	13.6	43.5	42.9	15.0	57.3	27.7	15.2
1986	13.5	42.5	44.0	14.2	56.5	29.3	14.7
1991	13.2	37.1	49.7	12.5	48.2	39.2	11.2
			FEMALES (a)				
1926	11.0	24.5	64.5	79.7	1.1	19.2	68.7
1936	7.8	19.2	73.0	74.4	1.9	23.7	66.6
1945	6.1	24.5	69.0	38.5	11.1	50.4	32.0
1951	5.1	25.1	69.8	14.6	22.9	62.5	9.5
1956	4.5	23.6	71.9	11.4	22.6	66.0	6.9
1961	4.2	24.3	71.5	9.5	30.9	59.6	11.9
1966	5.1	23.4	71.5	10.1	36.2	53.7	17.8
1971	5.3	22.8	71.9	8.9	39.6	51.5	20.4
1976	5.7	21.1	73.2	6.6	38.6	54.8	18.4
1981	6.9	19.5	73.6	9.3	35.6	55.1	18.5
			FEMALES (b)				
1976	6.2	24.2	69.7	6.0	41.1	52.8	17.0
1981	7.5	21.9	70.7	7.8	37.1	55.1	15.6
1986	8.3	20.6	71.1	7.9	34.8	57.2	14.2
1991	7.8	16.1	76.1	6.0	24.9	69.1	8.7

Notes: (a) Sole Maori and Non-Maori classification, Full-time workforce aged 15+ years; Data for 1926 include 'activities not specified'.
(b) Maori Ethnic Group and European classification, Full-time plus Part-time workforce aged 15-64 years; 'Not Specified's' excluded.
ID=Index of Dissimilarity (Non-Maori/European minus specified Maori classification).

Source: (a) Thompson 1985, Table 263; (b) Database A (see Appendix F.1).

Despite some substantial differences between the two data sources, especially for females in 1991, the overall picture is one of increasing convergence. This is confirmed in Figure 8.1.2, which plots the index of dissimilarity (ID) for both datasets. At the rate of change experienced between 1986 and 1991, the data imply the achievement of parity within approximately 16 years for males and 8 years for females—around 2007 for males and 1999 for females. However, it is also important to note that the trend towards convergence slowed over the 1960-1980 period, by far the greatest movements occurring over the early years. Indeed, where the ID for females had approached zero in 1956, it widened during the 1960s (Thompson 1985:129) and by 1991 had not returned to its earlier low level.

Figure 8.1.2
Index of Ethnic Dissimilarity for the Industrial Structure of the Maori and Non-Maori Workforces, by Sex, 1926-1991



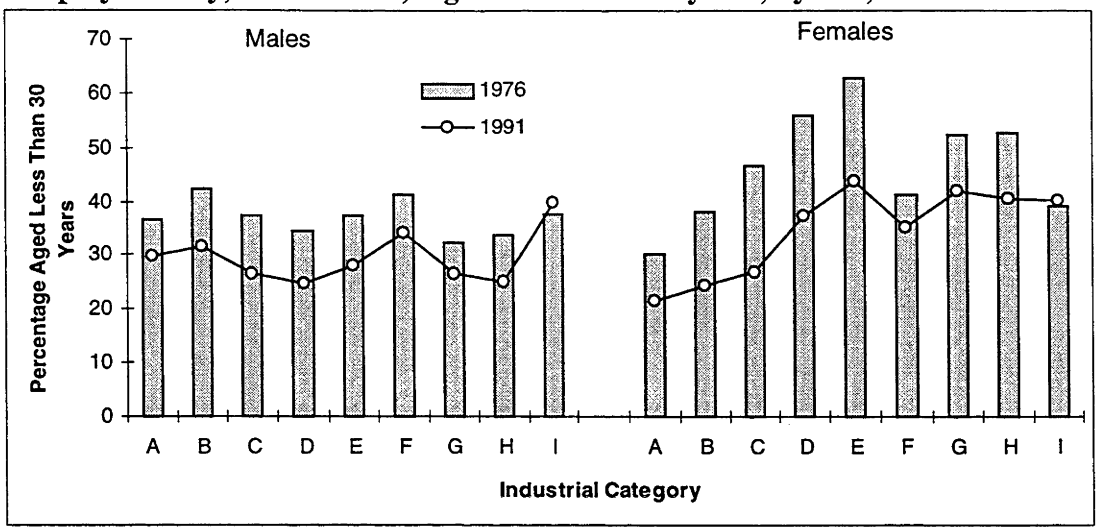
Notes: (a) Sole Maori and Non-Maori classification, Full-time workforce aged 15+ years; Data for 1926 include 'activities not specified'.
(b) Maori Ethnic Group and European classification, Full-time plus Part-time workforce aged 15-64 years; 'Not Specified's' excluded.

Source: Table 8.1.1

8.1.1 Industrial Distribution and Ethnic Differences in Age Structure:

The extent to which ethnic differences in age structure may be involved in these trends and patterns is suggested in Figure 8.1.3, which gives an indication of the age-profile of each industry (irrespective of ethnicity), showing, by sex, the proportion of persons in each industry aged less than 30 years, for 1976 and 1991.

Figure 8.1.3
Percentage of Total Workforce in Each Industry (Full-time plus Part-time, Employed Only, 15-64 Years) Aged Less Than 30 years, by Sex, 1976 and 1991



Notes: A Agriculture Hunting Forestry Fishing
B Building and Construction
C Community Social Personal
D Electricity Gas and Water
E Finance Insurance Property
F Manufacturing
G Mining and Quarrying
H Transport Storage Communications
I Wholesale Retail and Restaurant

Source: Database A (see Appendix F.2)

Although the data identify a significant maturation[1] of the labour force between 1976 and 1991, it is very clear that the patterns remain similar between observations. For males in 1976, the 'building and construction' and 'manufacturing' industries had the most youthful age structures, whilst in 1991 these were joined—and overtaken by—the 'wholesale, retail, restaurant' industry. The situation is both different and more pronounced for females, the youngest age structure at both observations occurring for the 'finance, insurance, property' industry, although more markedly so in 1976 than in 1991. In this instance it is perhaps less confusing to note that in both 1976 and 1991 the 'agriculture, hunting, forestry, fishing' industry had the *oldest* age structure, followed in 1976 by the 'wholesale, retail, restaurant' and 'manufacturing' industries, and in 1991 by the 'building and construction' and 'community, social, personal' industries. Either way, it is clear that different industries have different age structures, and thus that differing ethnic group age structures may contribute to industrial crowding. Specifically,

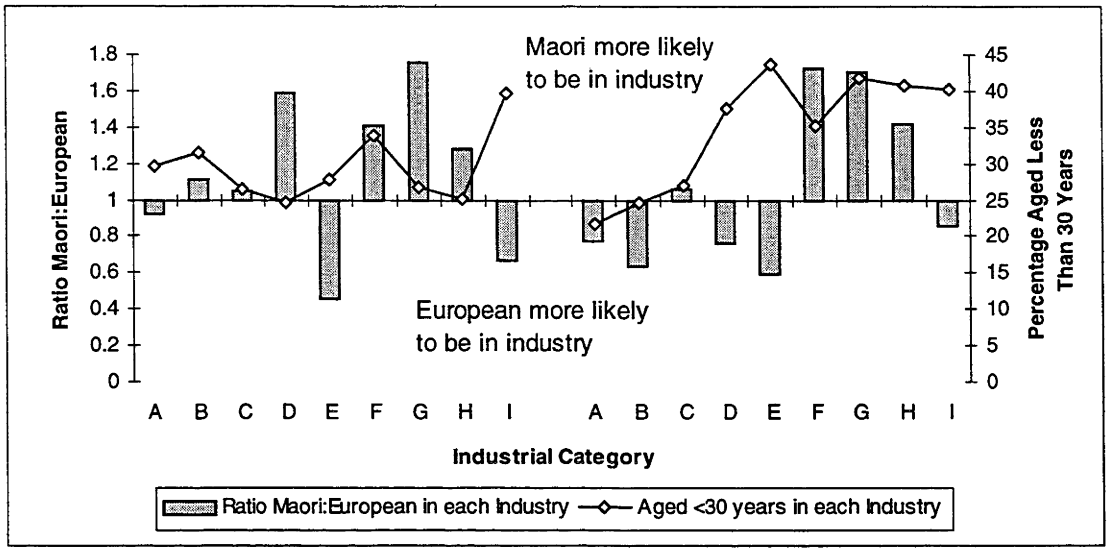
[1] The extent to which this maturation is a function of, for example, an increase in the proportion of younger persons either unemployed, or undertaking tertiary study, or of employers preferring older or more experienced workers is not being assessed here. However, it is not considered to be significantly related to population ageing (see Davies with Jackson 1994:119 in relation to the female industrial labour force).

industries with youthful age structures could be expected to have disproportionately higher levels of Maori participation, whilst the same could be expected of European participation for industries with older age structures.

As Figure 8.1.4—showing data for 1991—demonstrates, this hypothesis appears to hold true for Maori males in the 'manufacturing' and 'building and construction' industries, for Maori females in the small 'mining and quarrying' industry, and for European females in the 'agriculture, hunting, forestry, fishing' and 'building and construction' industries. However, for most of the remaining industries, the opposite is the case. For example, Maori of both sexes have proportionately higher levels of participation in the 'community, personal, social' industry, which has one of the oldest age structures, a relationship that also holds true for Maori males in the equally mature 'electricity, gas, water,' 'mining and quarrying' and 'transport, storage, communications' industries. Similarly, European males have higher levels of participation in the 'wholesale, retail, restaurant' industry, which has the youngest age structure for males, a situation repeated for European females in the 'finance, insurance, property' industry. Accordingly, the above hypothesis can be shown to hold true only for a few individual industries. Indeed, the correlation between the relative youthfulness of each industrial category and the industrial distribution for each ethnic group is higher for European (males r=0.67; females r=-0.14) than for Maori (males, r=0.47; females r=-0.19), indicating that ethnic group age structure has little to do with overall ethnic crowding, especially for females.

Nevertheless, as the exceptions indicate, it remains worth pursuing a more detailed age-oriented analysis. It is important, for example, to ascertain the extent of the age effect in those industries where it does occur, and also the extent to which observed (crude) differentials in any industry are not only the result of these additive effects (age structure increasing the concentration of an ethnic group in a given industry), but also of offsetting effects, whereby the age structure of one ethnic group conceals (either partially or fully) the underlying concentration of the other.

Figure 8.1.4
Percentage of Total Workforce in Each Industry (Full-time plus Part-time, Employed Only, 15-64 Years) Aged Less Than 30 years, and Ratio of Maori to European in Each Industry, by Sex, 1991

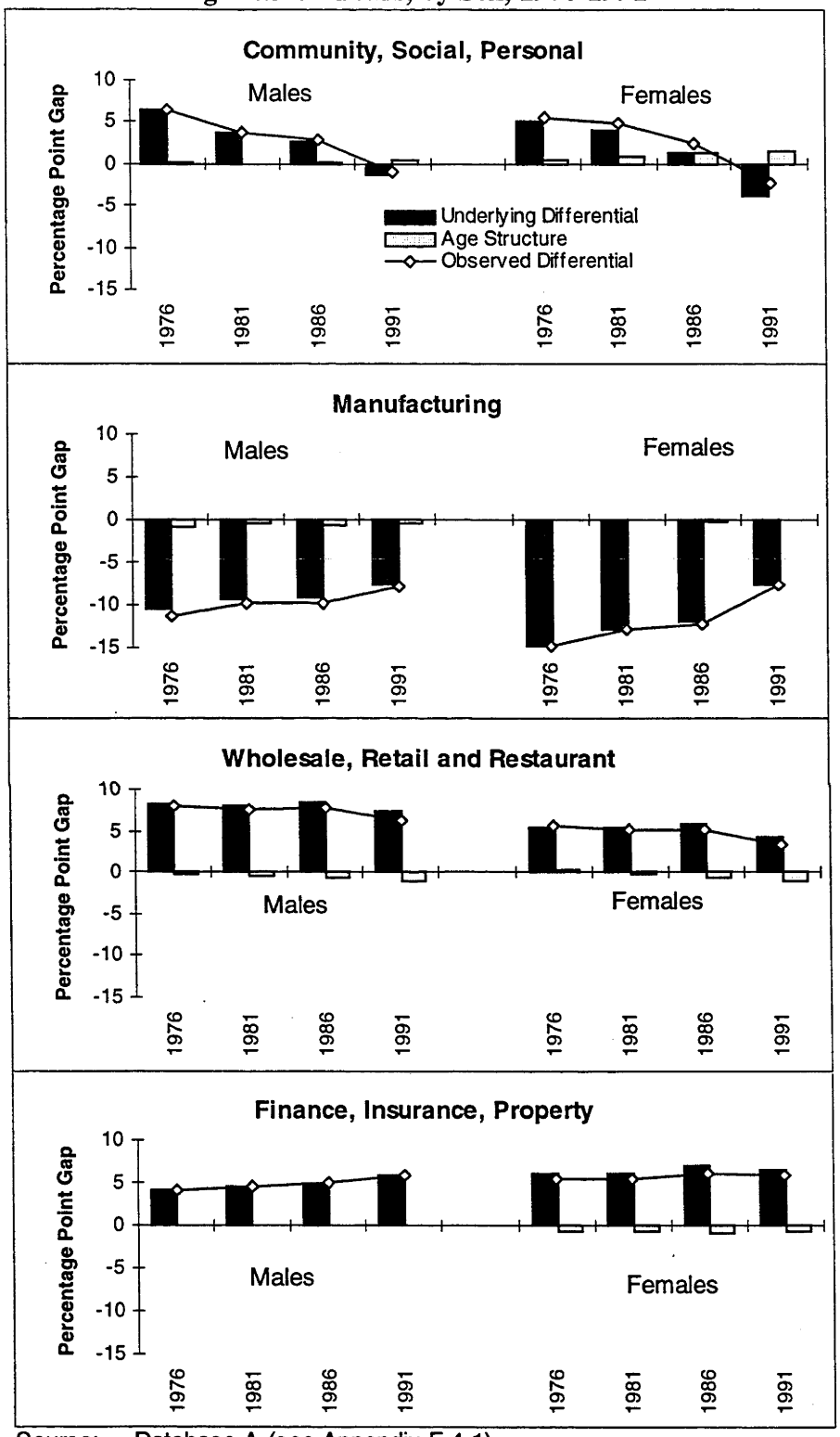


Notes:
A Agriculture Hunting Forestry Fishing
B Building and Construction
C Community Social Personal
D Electricity Gas and Water
E Finance Insurance Property
F Manufacturing
G Mining and Quarrying
H Transport Storage Communications
I Wholesale Retail and Restaurant

Source: Database A (see Appendices F.2 and F.3)

Component analysis, the results of which are given in Figures 8.1.5 and 8.1.6 (the former examining the four major industries; the latter, the more minor industries), in fact confirms that ethnic differences in age structure have had relatively small effect on ethnic differentials in most industries across the 1976-1991 period. However, this is less true in the increasingly significant 'community, social, personal' industry, which in 1991 was the largest industry for females of both ethnic groups, accounting for just on 40 per cent of Maori females and 38 per cent of European females, and the third largest industry for males, accounting for just under 20 per cent of males of both groups. Three features stand out. First, the age-effect favoured European females at all observations, and European males in 1976, 1986 and 1991, thereby adding to the concentration of European in the industry over the 1976-1986 period, although considerably more so for females than males. Second, the age-effect was greater in 1991 than in 1976, at least in part because the underlying ('true') differentials had declined. Third, both the observed (crude) and underlying differentials shifted between 1986-1991 from a European advantage to a Maori advantage, for both sexes.

Figure 8.1.5
Component Analysis of Industrial Distribution, Selected Major Industries, Maori Ethnic Group and European Workforces (Full-time plus Part-time) Aged 15-64 Years, by Sex, 1976-1991



Source: Database A (see Appendix F.4.1)

In 1986, these patterns resulted in the European age structure accounting for just on one-half of the observed differential between Maori and European females in the 'community, social personal' industry, up from 9 per cent in 1976, whilst in 1991 the European age structure had the opposite effect, offsetting the underlying differential by more than one-third. Although the underlying differential for males in 1991 was considerably smaller than that for females, it too was reduced by approximately one-third, the effect of the more mature European age structure. In 1976 the age-effect had been in the vicinity of 3 per cent. Thus, and whilst both observed and underlying differentials in the industry are the smallest of all four categories, and the age-effect fluctuated over time, the European age structure first added to the concentration of European in the industry, and then contributed to a partial amelioration of ethnic stratification, albeit whilst simultaneously concealing the true extent to which the underlying differentials had shifted to a Maori advantage.

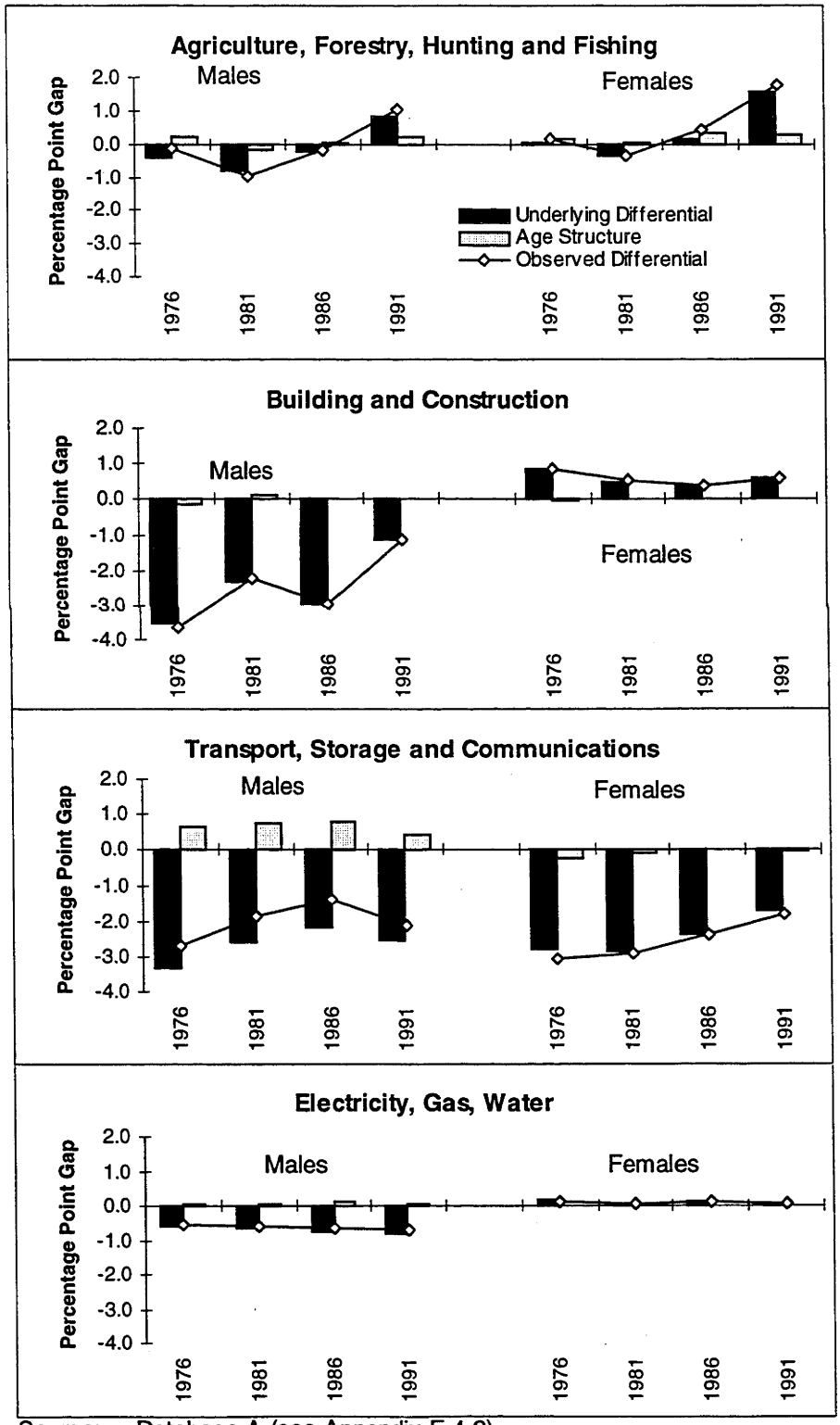
In the case of the manufacturing industry—the largest industry for males of both groups, although followed closely by the 'wholesale, retail, restaurant' industry for European males, and the 'community social personal' industry for Maori males—the Maori male age structure has similarly played a small role in the concentration of Maori males in that industry (the contribution ranging between 4 and 8 per cent).

Conversely, in the remaining industries within which ethnic differences in age structure have a conspicuous—if very small—effect ('wholesale, retail, restaurant' for both sexes, and 'finance, insurance, property' for females), the Maori age structure has acted to offset the underlying differentials, which favoured European at all observations, with the result that the concentration of European in those industries has been partially concealed, and ethnic stratification, partially ameliorated. The most significant of these effects obtain for females in the 'wholesale, retail, restaurant' industry, which in 1991 was the second largest industry for females, accounting for 24 and 20 per cent of European and Maori females respectively, and where, in 1991, the effects reduced the observed differential by one-fifth. Furthermore, these effects increased across the period (in part because the underlying differentials declined), as they did also for males in this industry.

Age effects aside, the trends in Figure 8.1.5 also show that the underlying differentials declined overall in all but the 'finance, insurance, property' industry. A similar pattern is evident from Figure 8.1.6, which presents the results (of component analysis) for four of the remaining five industrial categories, these representing both

proportionately smaller industries, and smaller ethnic differentials within each industry. Findings for the very small 'mining and quarrying' industry are not presented, but are included in Appendix F.4.2.

Figure 8.1.6
Component Analysis of Industrial Distribution, Selected Industries, Maori Ethnic Group and European Workforces (Full-time plus Part-time) Aged 15-64 Years, by Sex, 1976-1991



Source: Database A (see Appendix F.4.2)

Within the reduced scale of Figure 8.1.6, ethnic differences in age structure can similarly be seen to have had very little—and a generally declining—effect in the smaller industries. The only real exception obtains in the 'transport, storage, communications' industry for males, where the older European age structure at all observations reduced by between 17 and 37 per cent the observed differentials, which show a Maori concentration at all observations, and which were the largest differentials in this grouping of industries. Pertaining in 1991 to just under 10 per cent of Maori males and 7 per cent of European males, these effects partially concealed the true extent to which Maori males were concentrated in the industry.

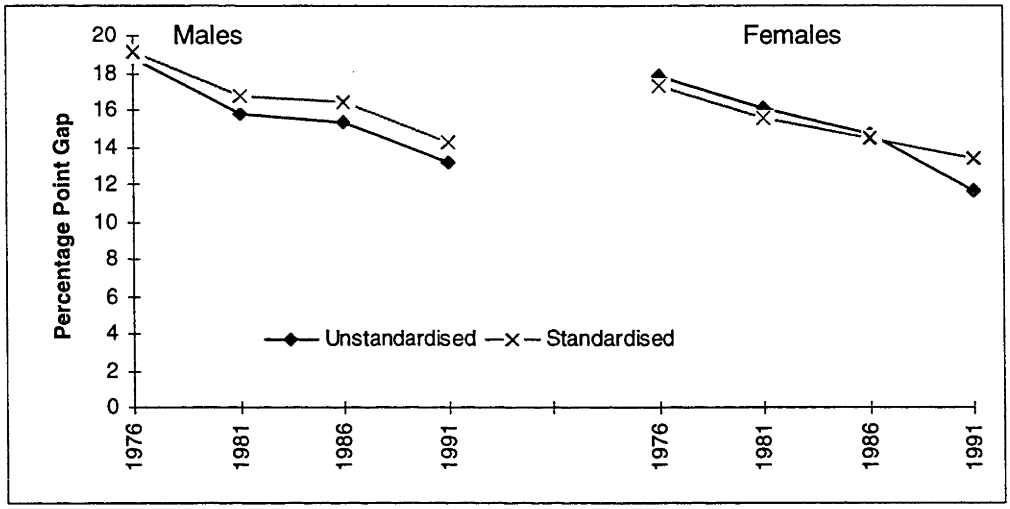
By contrast, in both 1986 and 1991 for females, and in 1991 for males, the European age structure added to the concentration of European in the slightly larger 'agriculture, forestry, hunting, fishing' industry. Possibly reflecting the structural ageing of New Zealand's farming population, the effects exacerbate a shift from a small underlying concentration of Maori males between 1976-1986, and briefly, in 1981 for Maori females, to, by 1991, a substantially larger underlying concentration for European of both sexes.

The only other industry to show an overall increase in the underlying differential across the 1976-1991 period was the very small 'electricity, gas, water' industry for males, although that for males in the larger 'transport, storage, communications' industry also saw a small increase between 1986-1991. In both cases, the underlying differentials favoured Maori at all observations, but in neither case was age structure a cause of the increase.

Thus it must be concluded that not only have the underlying differentials in most industries declined, but that ethnic differences in age structure have played a fairly small role in producing those differentials. These findings are summarised in Figure 8.1.7, which compares the unstandardised indices of dissimilarity for the period 1976-1991 with their standardised equivalents. (Note that these IDs differ slightly from those given earlier in Figure 8.1.3, which were based on broader sectoral distributions.) The data show that, in the aggregate, the Maori male age structure had a slight deflationary (i.e. advantageous) effect on the ID at all observations across the 1976-1991 period, whilst this occurred for females only in 1991. In addition, the unstandardised indices underwent a slightly greater decline across the 1976-1991 period than the standardised indices, for both sexes, indicating that the Maori age structure made a very small contribution to the improvement. As in the previous chapter, however, it must be emphasised that

aggregate measures conflate the effects that were shown for each category, and which continue to have category-specific implications.

Figure 8.1.7
Comparison of Standardised and Unstandardised Indices of Dissimilarity for the Industrial Structures of the Maori and European Workforces Aged 15-64 years, by Sex, 1976-1991



Notes: Data for Maori standardised to age structure of European workforce
Source: Database A (see Appendix F.4.3)

Indeed, three important caveats must be appended to these findings. First, despite the fact that the industries with declining underlying differentials pertained in 1991 to 82 and 86 per cent of the Maori male and female workforces, and to 75 and 78 per cent of the European male and female workforces, European males remain concentrated in three industries ('wholesale, retail, restaurant', 'finance, insurance, property', and 'agriculture, forestry, hunting, fishing'), and Maori males in the remaining six. Similarly, European females remain concentrated in four industries (with 'building and construction' added to the list of these for European males), and Maori females in the remaining five. Second, at the aggregate level depicted by the index of dissimilarity, the effects of age structure are conflated. That is to say, as Figures 8.1.5 and 8.1.6 showed, in some industries age structure has an additive effect, and in some, an offsetting effect. The results given in Figure 8.1.7 are the net of the two, and should not detract attention from the effects in each individual industry. Third, and perhaps most importantly, it must be remembered that ethnic differentials in industrial distribution (and in occupational distribution, which follows) pertain to those who are employed, the unemployed being far less likely to state (or to be asked to state) a 'usual industry'.

Declines in the differentials for any industry, or alternatively, improvements to the ID, must to some extent be caused by movements out of employment altogether. The underlying (raw) data identify that the disproportionate decline in Maori employment has occurred in those industries where Maori were most concentrated—the manufacturing industry for males, and the manufacturing and 'wholesale, retail, restaurant' industries for females—resulting in concomitant declines in the respective IDs. Similarly, because the fall in employment was also shown in Chapter 7 to have disproportionately affected young Maori, the movement out of certain industries by those persons will have reduced the effects of age structure in those industries. This is particularly likely to have been the case for males in the manufacturing industry, but it is equally likely to have occurred in any industry where the 'advantage' from age structure accrued to Maori.

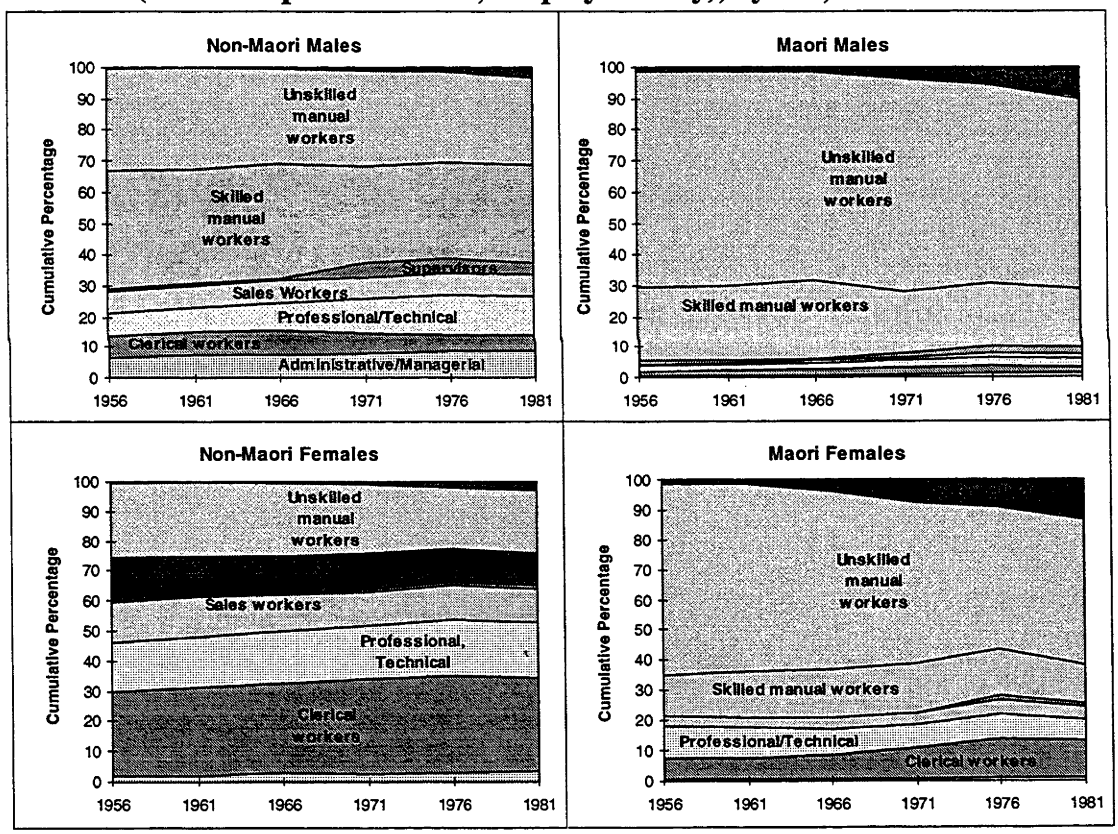
8.2 OCCUPATIONAL DISTRIBUTION

The picture pertaining to trends in occupational ethnic differentials is equally complex, as is its analysis. For example, in a study covering the period 1956-1981, Brosnan (1987:100) claims that ethnic segregation (dissimilarity) increased, whilst Moir's (1977) study, covering much of the same period, 1956-1971, claims a slight decrease. Brosnan ascribes the main difference between his and Moir's findings to the level of disaggregation of the data, his own study using the more refined 2- and 4-digit data whilst that of Moir used 1-digit data. There were also differences in the indices used, and in the internal consistency of the respective databases, Moir not adjusting for census changes in occupational classification. However, it is also worth noting a further comment of Brosnan (p.94), which concerns the considerably higher proportion of Maori than of non-Maori who failed to state a usual occupation, a probable reflection of the former group's greater unemployment. When this category is included in the segregation index, at least some of the ethnic differential is not occupational at all.[2]

[2] As noted in chapter 4, this comment is not intended as a criticism—the analyst of the ID is faced with a serious dilemma. If the 'not specifieds' are different for each group, but are included in the analysis, at least part of the resulting differential concerns 'the proportion who needed to *specify* their occupation', not the proportion who needed to change it. On the other hand, if the not specified's are excluded and the data re-totalled, the proportions in each category are expanded *uniformly* by the proportion that was not specified. Where the proportion not specified is considerably different between the two groups, the result can be an artifactual reduction in the ID.

Whilst the situation is essentially unresolvable, an impression of the occupational distributions for each ethnic and sex group with the 'not specifieds' included will assist interpretation. These data, drawn from Brosnan's paper because of their greater refinement and internal consistency, are presented in Figure 8.2.1. The historical concentration of Maori of both sexes in the manual labour categories is very clear, with the greater proportion of these persons being unskilled workers. Naturally the data also show the converse: the substantially smaller proportions of Maori of both sexes, but most particularly Maori males, in the remaining categories.

Figure 8.2.1
Occupational Structure of the Maori and Non-Maori Workforces Aged 15+ Years (Full-time plus Part-time, Employed Only), by Sex, 1926-1981



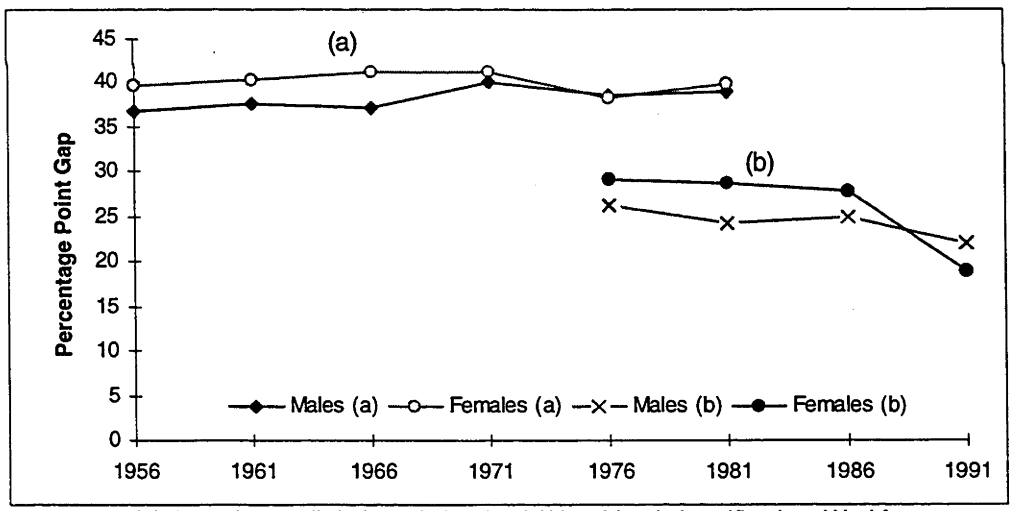
Source: Brosnan 1987, Tables 1 and 2 (see Appendix F.5).

Also evident from Figure 8.2.1 is an increase over time in occupational differentiation. However, when summarised as indices of dissimilarity, as in Figure 8.2.2 (data-series *a*), it can be seen that very little change occurred across the 1956-1981 period—the ethnic IDs first increasing slightly for both sexes, and then declining slightly,

but in 1981 remaining above their 1956 levels. (Note that when the 'not specified's' are excluded, the IDs are fractionally lower—less than 1 per cent in 1981—but the trends remain identical.)

Also shown in Figure 8.2.2 are a second set of IDs for the 1976-1991 period (data-series *b*), drawn from Database A. Importantly, these data differ from the first set by occupational classification, level of data refinement, ethnic classification and the age group to which the data pertain, reinforcing Brosnan's comments regarding the need for internal consistency. Nevertheless, the trends do not appear to be grossly inconsistent, and in the absence of alternatives it must be concluded that a decline in ethnic dissimilarity has recently occurred, accelerating during the 1986-1991 period. Earlier comments regarding the likely role of unemployment (or having left the labour force altogether) in producing these latter trends should be recalled.

Figure 8.2.2
Index of Ethnic Dissimilarity for the Occupational Structure of the Maori and Non-Maori/European Workforces, by Sex and Ethnic Classification, 1956-1991



Notes: (a) Based on 2-digit data; Sole Maori / Non-Maori classification; Workforce Aged 15+ Years, Not Specified's included.
(b) Based on 1-digit data; Maori Ethnic Group / European classification; Workforce aged 15-64 years; Not Specified's excluded.
Data for Maori standardised to age structure of non-Maori/European workforce.

Source: (a) Brosnan 1987, Table 3 (see Appendix F.5)
(b) Database A (see Table 8.2.1)

Detailed comments on trends for each individual category for the period 1956-1981 are given in Brosnan (1987) and are thus not elaborated here. However, it should be noted that at the end of the period, differences between the proportionate distributions for each sex-ethnic group showed that Maori males were slightly more likely than non-Maori males to be unskilled manual workers than was the case in 1956, and slightly less likely than non-Maori males to be skilled manual workers or supervisors than was the case in 1956. Maori females fared slightly better, seeing, for example, a small reduction in the difference between the proportions of Maori and non-Maori unskilled manual workers, and a small increase in the difference between the proportions of Maori and non-Maori skilled manual workers. Nevertheless, for both males and females, relative improvements for Maori were confined to the smallest occupational categories, with the above result of the small increase in the ID for each sex.

The occupational distributions corresponding to the second data-series (b) in Figure 8.2.2 are given in Table 8.2.1. For both sexes, the proportionate ratio (PR) of Maori to European (see Chapter 4, Section 4.2.1) increased in five of the seven occupational categories and fell in the remaining two, although the affected categories differ slightly by sex. The PR fell for both sexes in the 'agriculture, forestry, hunting, fishing' occupations (for males from 0.98 to 0.88 and for females from 0.96 to 0.74), for males in the 'production, transport, equipment operators, labourers' occupations (from 1.58 to 1.54), and for females in the service worker occupations (from 1.71 to 1.55). The greatest increases in the PR occurred for males in the 'clerical', 'service worker' and 'professional, technical' occupations, and for females in the 'administrative, managerial', 'professional, technical' and 'clerical' occupations.

Reflecting the falling IDs based on these data (although noting that IDs are based on absolute differences, which give a different perspective), these trends indicate generally positive changes. However, it is important to note that the improved relativity for Maori of both sexes in the 'clerical' occupations reflects an absolute decline in the proportions of European in those occupations, whilst the decline in relativity for Maori females in the 'agriculture, forestry, hunting, fishing' and 'service worker' occupations reflects an absolute increase in the proportion of European females in those occupations. These trends suggest that the apparent improvements for Maori in these categories should not be taken at face value, but rather as reflecting the probable further differentiation that would be discernible if more disaggregated (2- or 4-digit) data were

used. Indeed, the sizeable relative increase in the proportions of Maori males in the 'service worker' occupations is not necessarily a positive trend.

Table 8.2.1
Occupational Structure of the Maori Ethnic Group and European Workforces Aged 15-64 Years (Full-time plus Part-time, Employed Only), by Sex and Ethnic Classification, and Index of Dissimilarity, by Sex, 1976-1991

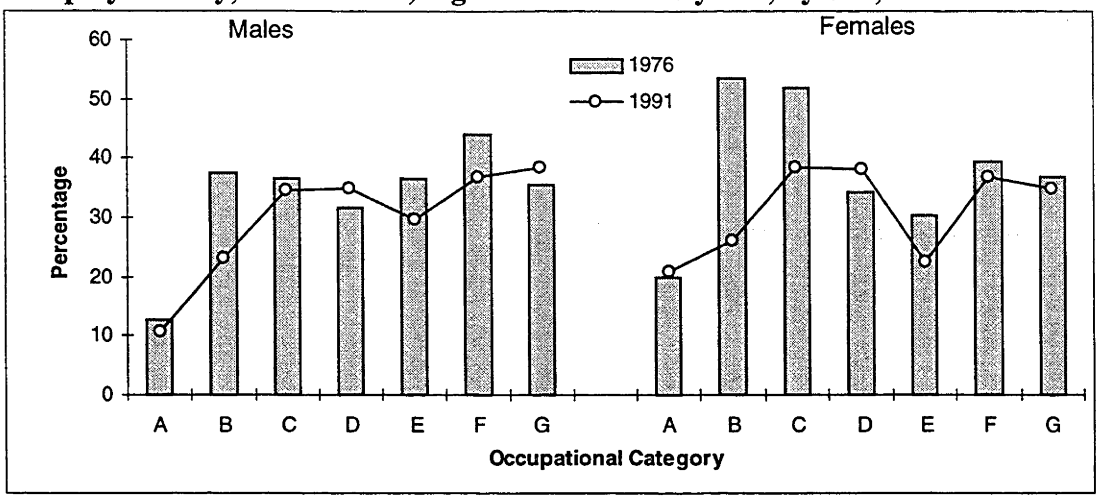
	MALES				Index	FEMALES				Index
	1976	1981	1986	1991	1991/1976	1976	1981	1986	1991	1991/1976
EUROPEAN										
Administrative, Managerial	4.97	5.61	7.80	9.04	1.82	0.75	0.84	2.36	3.32	4.43
Agricultural/Forestry Workers, Fishermen, Hunters	13.08	13.72	13.40	12.97	0.99	5.72	6.92	7.74	7.04	1.23
Clerical	8.81	8.47	7.99	7.19	0.82	34.50	33.53	33.94	32.69	0.95
Production, Transport, Equipment Operators, Labourers	45.06	42.54	40.54	35.91	0.80	12.91	10.97	9.75	6.91	0.54
Professional, Technical	13.45	13.40	14.23	16.52	1.23	19.74	19.98	19.32	22.60	1.14
Sales Workers	10.26	10.18	9.96	11.65	1.14	12.93	13.32	12.51	12.99	1.00
Service Workers	4.37	6.08	6.07	6.73	1.54	13.45	14.43	14.38	14.45	1.07
Total	100.00	100.00	100.00	100.00	1.00	100.00	100.00	100.00	100.00	1.00
Number	705015	708396	735672	656145		391983	441840	512565	505428	
Not Specified/Not Applicable (Excluded)	5343	11208	5802	8142		2040	5151	2550	7668	
MAORI ETHNIC GROUP										
Administrative, Managerial	1.05	1.11	1.54	2.97	2.82	0.29	0.37	0.73	1.96	6.84
Agricultural/Forestry Workers, Fishermen, Hunters	12.88	14.22	13.05	11.36	0.88	5.48	6.92	7.30	5.22	0.95
Clerical	4.03	4.46	5.16	6.30	1.56	20.63	21.15	22.69	26.52	1.29
Production, Transport, Equipment Operators, Labourers	71.29	66.17	64.94	55.27	0.78	32.55	29.45	28.82	17.88	0.55
Professional, Technical	4.40	4.38	5.18	8.96	2.04	10.93	10.29	10.70	17.42	1.59
Sales Workers	3.06	3.43	3.55	5.68	1.85	7.16	7.17	6.65	8.68	1.21
Service Workers	3.28	6.23	6.58	9.45	2.88	22.96	24.66	23.09	22.33	0.97
Total	100.00	100.00	100.00	100.00	1.00	100.00	100.00	100.00	100.00	1.00
Number	71718	79347	86040	64386		36738	44877	55494	47538	
Not Specified/Not Applicable (Excluded)	1686	3387	1626	2010		753	1179	918	1734	
RATIO MAORI PROPORTIONS TO EUROPEAN PROPORTIONS (PROPORTIONATE RATIO)										
Administrative, Managerial	0.21	0.20	0.20	0.33		0.38	0.44	0.31	0.59	
Agricultural/Forestry Workers, Fishermen, Hunters	0.98	1.04	0.97	0.88		0.96	1.00	0.94	0.74	
Clerical	0.46	0.53	0.65	0.88		0.60	0.63	0.67	0.81	
Production, Transport, Equipment Operators, Labourers	1.58	1.56	1.60	1.54		2.52	2.68	2.96	2.59	
Professional, Technical	0.33	0.33	0.36	0.54		0.55	0.52	0.55	0.77	
Sales Workers	0.30	0.34	0.36	0.49		0.55	0.54	0.53	0.67	
Service Workers	0.75	1.03	1.08	1.41		1.71	1.71	1.61	1.55	
Total	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
INDEX OF DISSIMILARITY	26.24	24.28	24.91	22.09	0.84	29.16	28.70	27.79	18.85	0.65

Notes: Index of Dissimilarity = European minus Maori, Not Specified's excluded.
Source: Database A

8.2.1 Occupational Distribution and Ethnic Differences in Age Structure:

The extent to which ethnic differences in age structure may be involved in these patterns and trends is indicated in Figure 8.2.3, which shows the proportion of persons aged less than 30 years in each occupational category, for 1976 and 1991. Again the patterns suggest the possible involvement of age structure in ethnic crowding.

Figure 8.2.3
Percentage of Total Workforce in Each Occupation (Full-time plus Part-time, Employed Only, 15-64 Years) Aged Less Than 30 years, by Sex, 1976 and 1991

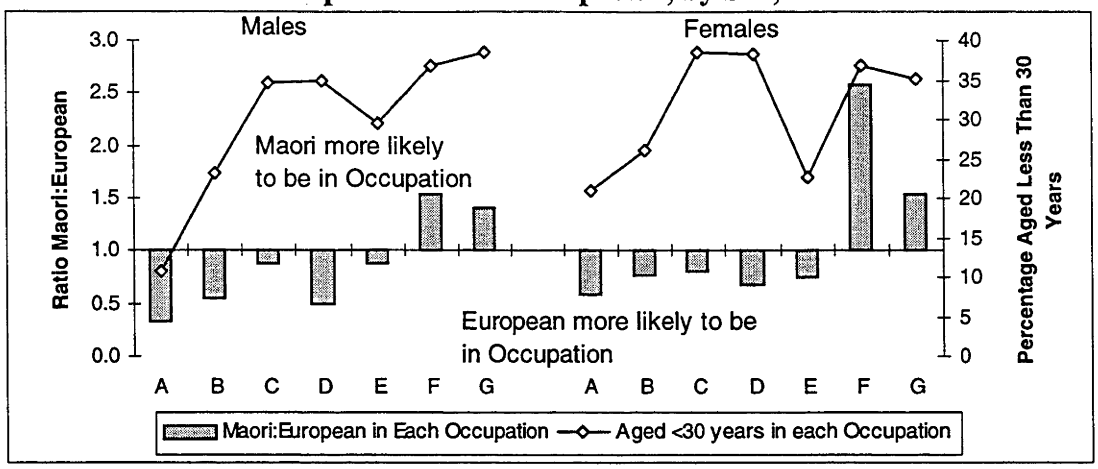


Notes:
A Administrative Managerial
B Professional Technical
C Clerical
D Sales Workers
E Agricultural/Forestry Workers Fishermen and Hunters
F Production Transport Equipment Operators and Labourers
G Service Workers

Source: Database A (see Appendix F.6)

The argument is to some extent further supported in Figure 8.2.4, which compares the same data for 1991 against ratios of the proportions of Maori and European in each occupational category. The categories with the youngest age structures for males in 1991—'service workers' and 'production, transport equipment operators and labourers'—are clearly those in which Maori males are disproportionately represented, whilst non-Maori males are disproportionately represented in the categories with the oldest age structures, in particular the 'administrative, managerial', 'professional technical', and 'agricultural' occupations. A similar pattern is evident for females, although the occupations with the very youngest age structures ('clerical' and 'sales' workers) have higher proportions of European. This exception is also observed for males.

Figure 8.2.4
Percentage of Total Workforce in Each Occupation (Full-time plus Part-time, Employed Only, 15-64 Years) Aged Less Than 30 years, and Ratio of Maori to European in Each Occupation, by Sex, 1991



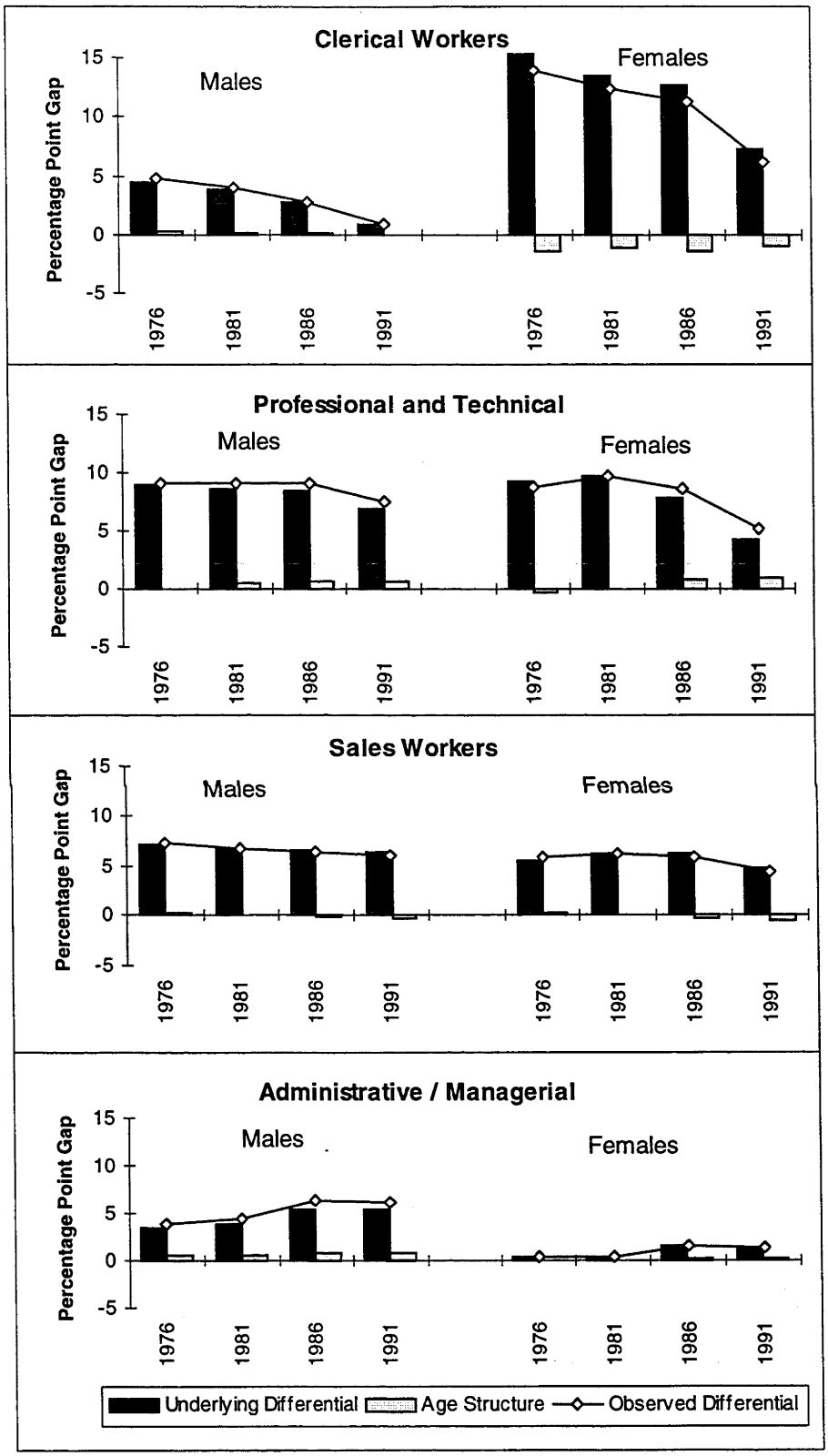
Notes:
A Administrative Managerial
B Professional Technical
C Clerical
D Sales Workers
E Agricultural/Forestry Workers Fishermen and Hunters
F Production Transport Equipment Operators and Labourers
G Service Workers

Source: Database A (see Appendices F.6 and F.7)

In contrast to the situation for industry, therefore, wherein the relative youthfulness of each industrial category and the level of Maori concentration within it was weaker for Maori than European, the relationship between the relative youthfulness of each occupational category and Maori *vis-à-vis* European concentration in it is somewhat stronger. This is supported by *r*'s of 0.39 and 0.69 for Maori males and females, against 0.21 and 0.46 for European males and females.

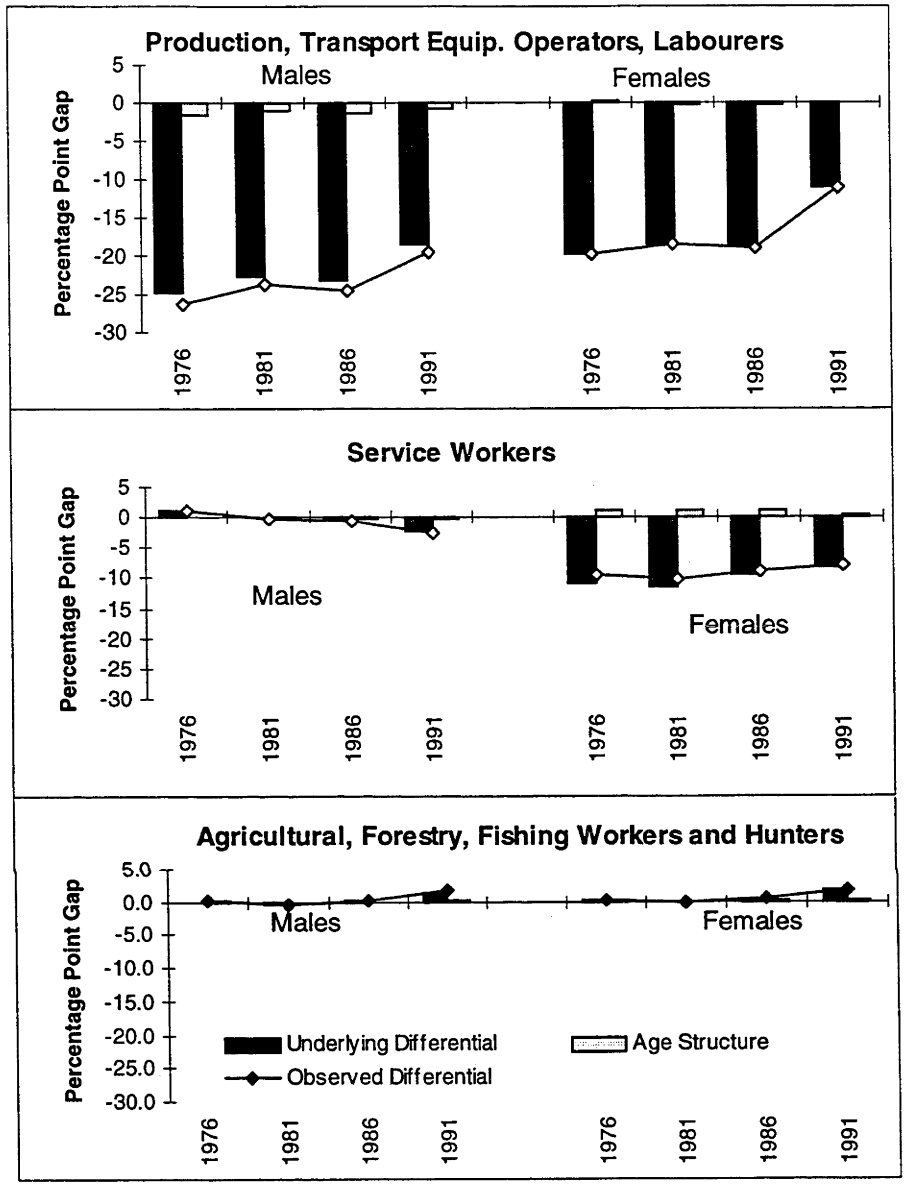
Nevertheless, Figures 8.2.5 and 8.2.6—which present the results of component analysis for 'white' and 'blue collar' occupations (note different scales for the two groupings) show that the Maori age structure is of significance in three occupational categories only: 'clerical', for females, at all observations; 'sales workers' in 1986 and 1991 for both sexes, and 'production, transport, equipment operators and labourers' for males, at all observations.

Figure 8.2.5
Component Analysis of Occupational Distribution in White Collar Employment, Maori Ethnic Group and European Workforces Aged 15-64 Years, by Sex, 1976-1991



Source: Database A (see Appendix F.8.1)

Figure 8.2.6
Component Analysis of Occupational Distribution in Blue Collar Employment, Maori Ethnic Group and European Workforces Aged 15-64 Years, by Sex, 1976-1991



Source: Database A (see Appendix F.8.2)

In the clerical occupations, which in 1991 accounted for 33 and 27 per cent respectively of European and Maori females, the more youthful Maori female age structure at all observations partially offset the underlying differential, which benefited European at all observations. The contribution of the age-effect to the observed differences saw an overall increase across the period, from 9 per cent in 1976, to 14 per cent in 1991, although as in the earlier analysis this increase will be, at least in part, a function of simultaneously declining underlying differentials. A similar, though weaker

effect obtained for both females and males in the proportionately smaller 'sales worker' category, which in 1991 accounted for 13 and 7 per cent of European and Maori females respectively, and for 12 and 6 per cent of European and Maori males. By contrast, for males in the extensive 'production, transport, equipment operators and labourers' occupations, which in 1991 accounted for 36 and 55 per cent of European and Maori males respectively, the more youthful Maori age structure had a small—though generally declining—additive effect, increasing by just under 5 per cent the concentration of Maori males in those occupations.

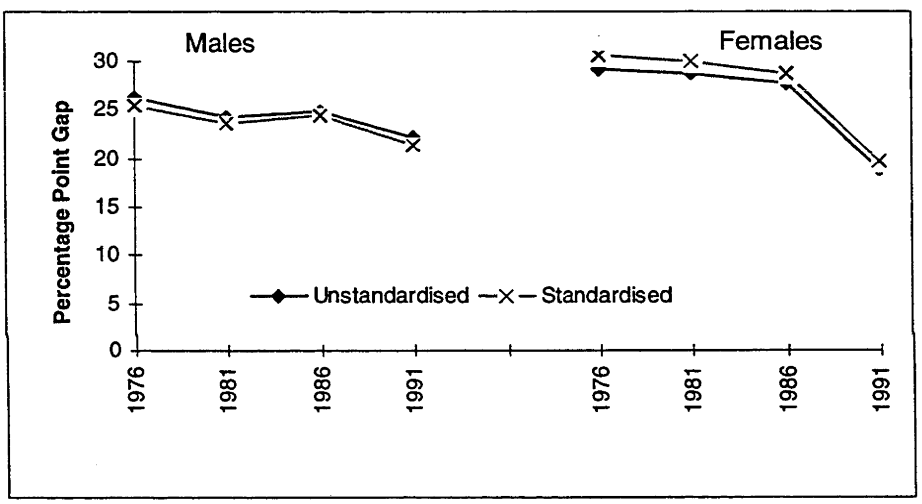
In all other occupational categories where ethnic differences in age structure had a conspicuous effect, the phenomenon gave a European advantage, adding to the concentration of European in the 'professional, technical' and 'administrative, managerial' occupations, although for females more in the former, and for males more in the latter. In 1991, for example, the European age structure increased the relative concentration of European females in the 'professional, technical' occupations by 21 per cent, and of European males in the 'administrative, managerial' occupations by 14 per cent. In the former case the effects increased across the period, whilst in the latter they reduced, in both cases these 'trends' being likely effects of trends in the underlying differentials, which in the former case declined, and in the latter, increased.

In terms of adding to ethnic stratification in any substantial form, therefore, the Maori age structure does this only for males and only in the 'production, transport, equipment operators and labourers' occupations, whilst the European age structure does this for both males and females in the 'professional, technical' occupations, and for males in the 'administrative, managerial' occupations. In the former and latter cases (the 'production, transport, equipment operators and labourers' and 'administrative, managerial' occupations) the effect is declining, whilst in the middle case it is increasing. In no occupational categories does the Maori female age structure have an additive effect of any import. Instead, the Maori female age structure partially conceals the true extent of European female concentration in the clerical occupations, whilst the European female age structure has a similar effect on the concentration of Maori females in the service occupations. In the former case the effect is increasing, whilst in the latter it is declining.

Summarising these patterns and trends by comparing the unstandardised index of dissimilarity (given earlier in Figure 8.2.2) with its age standardised equivalent confirms the overall small effect of age structure on occupational differentials, although the fact

that these indices conflate the various individual effects must again be emphasised. In the case of males, the standardised index falls just below the unstandardised index at all observations, identifying that the Maori male age structure has had a slightly inflationary (i.e. disadvantageous) effect on the occupational ID, whilst for females the opposite has been true. In neither case, however, did ethnic differences in age structure play a role in producing the overall decline in these indices. That is to say, in both cases, the standardised and unstandardised indices fell by an almost identical magnitude, for males, to 84 per cent of their 1976 levels, and for females, to 64 per cent.

Figure 8.2.7
Comparison of Standardised and Unstandardised Indices of Ethnic Dissimilarity for the Occupational Structures of the Maori and European Workforces Aged 15-64 years, by Sex, 1976-1991



Notes: Data for Maori standardised to age structure of European workforce.
Source: Database A (see Appendix F.8.3)

Aside from the effects of age structure, two other features of Figures 8.2.5 and 8.2.6 are of importance. First, all underlying differentials in the white collar occupations (Figure 8.2.5) show a European concentration at all observations and for both sexes, whilst in the blue collar occupations (Figure 8.2.6), two of the three categories show a Maori concentration at all but one observation, the exception being male service workers in 1976. Second, in the white collar occupations, the underlying differentials declined across the 1976-1991 period in all but one category, that of the 'administrative, managerial' occupations, where they saw an increase between 1981 and 1986 for both sexes. For females in this category, however, the differentials represent the smallest of

those for all four white collar occupations, whilst for both males and females they declined slightly between 1986-1991. In the blue collar occupations, the underlying differentials for the large 'production, transport, equipment operators and labourers' category similarly declined across the 1976-1991 period for both sexes, as they did also for female service workers, but they increased for both male service workers (shifting from a small advantage for European to a small advantage for Maori) and those of both sexes in the 'agricultural, forestry, fishing, hunting' category. Again, however, the latter increases pertained to the smallest differentials.

Collectively, the occupational categories in which the underlying differentials declined across the 1976-1991 period pertained to 71 and 76 per cent of European and Maori males, and 90 and 93 per cent of European and Maori females. The near-universality of these declines account for both the declines in the (unstandardised) indices of dissimilarity, and the sex differences in the rate of these declines. However, as noted earlier in the case of industry, they do not show the extent to which the relative numerical declines in employment within the key occupational categories (in particular, the 'production, transport, equipment operators and labourers' occupations) contributed to these outcomes, and thus until the proportions of Maori and European actually *in* employment equalise—or move towards equality—there can be little cause for complacency. Certainly the lower proportions and relatively greater declines of Maori females *vis-à-vis* European females in employment may account for the substantially greater improvements to the occupational ID for females. Similarly, the comments applied earlier to the relatively small effects of age structure in each industrial category also apply to the findings for occupation. That is to say, the relatively lower and decreasing proportions of young Maori in employment shown in Chapter 7 will have simultaneously removed these effects from each occupational category, especially those in which the age effect accrued to Maori.

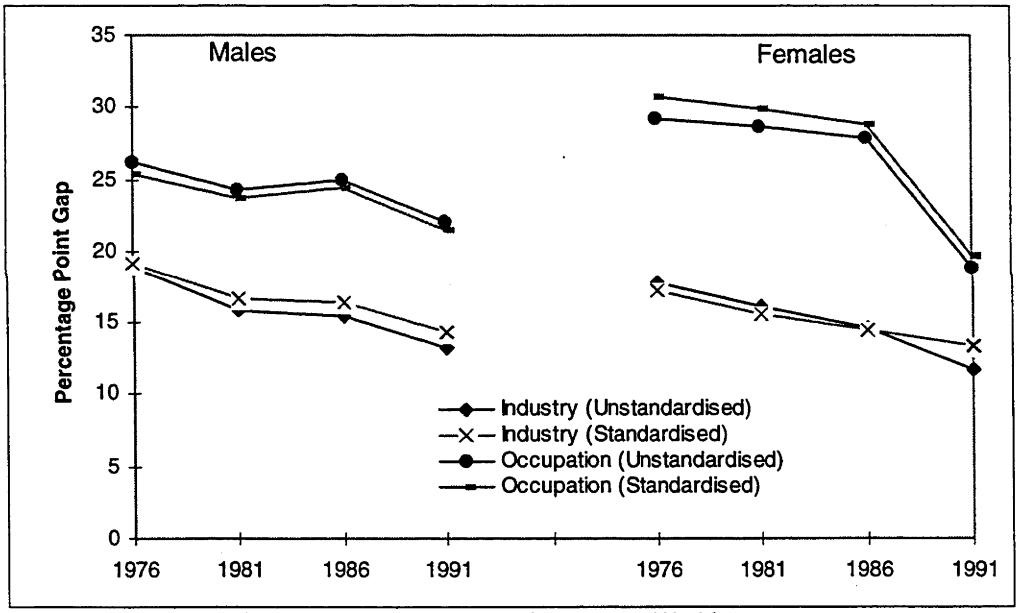
8.3 SUMMARY

Despite the persistence of differences in the aggregate industrial and occupational distributions of Maori and non-Maori/European, the overwhelming picture—with one important caveat, discussed below—is that of increasing convergence. For males, the decline in the (unstandardised) industrial ID to 70 per cent of its 1976 level was greater than that for the occupational ID, which fell to 84 per cent

of its 1976 level, whilst for females both indices fell by approximately the same magnitude, to 64 per cent of their 1976 levels.

In the case of industry, the Maori age structure made a small contribution to the improvement for both sexes, whilst it had no aggregate effect on the improvement for occupation for either sex. Figure 8.3.1 compares these trends (both before and after standardisation for age structure), clearly demonstrating that ethnic concentration by occupation remains greater than that by industry, for both sexes, although for females the gap between the two saw a dramatic shift towards closure between 1986-1991, taking the ID for occupation below that of males for the first time.

Figure 8.3.1
Comparison of Industrial and Occupational Indices of Ethnic Dissimilarity (Standardised and Unstandardised) for European and Maori Ethnic Group Workforces aged 15-64 Years, by Sex, 1976-1991



Notes: Data standardised to age structure of European Workforce.
Source: Database A (see Appendices F.4.3 and F.8.3)

That said, however, the extent to which both the recent substantial improvement in the occupational ID for females, and recent improvements to the IDs for both sexes in general, is likely to be a reflection of the general decline in employment demonstrated in Chapter 7, is an issue that was raised and cannot readily be dismissed. Since these data pertain to the employed workforce only, since the proportion in employment was demonstrated in Chapter 7 to have declined considerably more for Maori than for

European, and more for Maori females than for European females, and since the underlying (raw) data confirm that Maori of both sexes have disproportionately lost employment in the key industries and occupations within which they were previously concentrated, reliance on trends within industry and occupation as key indicators of trends in ethnic stratification is rendered problematic. Indeed, if the recent declines have in fact been largely caused by the relative increase in Maori unemployment, the longer term trends shown in Figures 8.1.1 and 8.2.2 indicate that there may have been little real change in the indices of dissimilarity since the late-1960s.

The caveat also applies to the effects of ethnic differences in age structure. The loss of increasingly greater proportions of young Maori than European from employment over the 1976-1991 period will have reduced the effects of age structure in those industries and occupations where young Maori were previously concentrated. Accordingly, the findings of relatively small age effects in the present chapter cannot be seen as definitive.

Nevertheless, it remains worthy of note that the Maori age structure at all observations added to the concentration of Maori males in both the manufacturing industry, in 1991 still the largest industry for all employed males (accounting for 28 per cent of Maori and 20 per cent of European), and the giant 'production, transport, equipment operators, and labourers' occupational category (in 1991 accounting for 55 and 36 per cent of employed Maori and European respectively). Similarly, the European age structure added to the concentration of European of both sexes in the 'professional, technical' and 'administrative, managerial' occupations, albeit minimally so for females in the latter; and, between 1976 and 1986, to the concentration of European females in the giant 'community, social, personal' industry. In each of these cases age structure added to ethnic stratification.

By contrast, almost no additive effects were detected for Maori females in any industry or occupation. Instead, the Maori female age structure tended to simultaneously give a Maori advantage in certain key industries and occupations (for example, the 'wholesale, retail, restaurant' and 'finance insurance, property' industries, and the 'clerical' and 'sales worker' occupations), but to thereby slightly conceal the true extent to which the underlying differentials for those categories favoured European. Similar effects also occurred for males in the 'wholesale, retail, restaurant' industry, and in the 'sales worker' occupations. In these situations the Maori age structure ameliorated ethnic stratification.

Importantly, as with the component analyses of the previous chapter, it was also shown that because the effects of both age structure and the underlying differentials differ by category (as well as by sex and period), they derive offsetting effects not only within, but also between, categories. These effects become conflated in age-standardised IDs, with the result that for policy purposes, ethnic differentials are better examined on a category by category basis.

9

ETHNIC DIFFERENTIALS IN EDUCATIONAL QUALIFICATIONS

9.0 INTRODUCTION

Regularly argued as underlying the labour force, employment, industrial and occupational differentials outlined in Chapters 7 and 8 are ethnic differences in educational qualifications. For example, the unemployed—disproportionately Maori, are less likely than their employed counterparts—disproportionately European, to hold formal qualifications; professionals and managers—disproportionately European, are more likely than Maori to do so. That said, it has also been observed that, despite improving qualification levels for Maori, occupational disparities continue to grow (Wilson 1979; Messina, Fraga, Rhodebeck and Wright 1992).

Initially, the bulk of educational differences between Maori and European were attributed to the lower proportions of Maori entering secondary school (Barrington 1971; Ramsay 1972; McKenzie 1982). From the 1960s, when these proportions more or less equalised, the explanation changed to the lower proportions of Maori remaining through to the sixth and seventh forms where the main university pre-requisite qualifications are gained (Harker 1970; Davies 1993).[1] Different value systems and aspirations (Bray 1971), as well as institutional racism, have also been implicated. However, not all qualifications are gained in the secondary school and university systems, nor in the teens and early twenties (Harker 1970:61-62), and thus it is important to review the total qualification distribution, the approach taken in this chapter.

It is also important to consider ethnic differences in age structure. Those without qualifications can be expected to be disproportionately amongst the oldest members of the adult population; those with professional and higher qualifications, disproportionately in their twenties to forties. As the relative proportions at each age change, so too do the overall qualification distributions. That is to say, with the census data typically employed to examine such distributions, each qualification category

[1] In New Zealand it is possible to apply for admission to University without 'secondary school qualifications', on attaining the age of 21 years.

represents the highest qualification held. This means that as each person vacates, for example, the 'no qualifications' category and moves into a higher category, only younger persons—and some immigrants—take their place. A large influx of young Europeans—for example, the arrival of the European baby boom at senior secondary school, or later, at the key ages for attaining post-school qualifications—could result in relative inflation or reduction in the importance of one or another category *vis-à-vis* those categories for Maori. In these terms, however, the more youthful age structure of the Maori population should translate into a relative advantage. In 1991, for example, Maori at age 15-19 represented 11.5 per cent of the total Maori population, compared with the corresponding 8.0 per cent for non-Maori, suggesting a positive implication for the Maori - non-Maori qualification differential over and above any 'real' difference.

This chapter explores these arguments from a number of perspectives. First, an historical overview of ethnic qualification differentials since the 1960s is given. As noted in the previous chapters, these patterns and trends are the information with which policy-makers typically work. Data for the Maori and European populations for the period 1981-1991 are then subjected to component analysis, separating the 'true' level of the ethnic differential at each observation from the component due to ethnic differences in age structure. This is followed by a cohort analysis of each qualification category, in which differences in the qualification-gathering experiences of Maori and European cohorts across the life cycle are investigated. Finally, the qualification data are correlated with labour force status, an overview that provides a bridge between the findings of Chapter 7 (labour force and employment status differentials), the present chapter, and the following chapter on income differentials.

9.1 QUALIFYING THE PAST

Numerous studies have demonstrated longstanding educational differentials between the Maori and non-Maori/European populations, but these have invariably focussed on enrolment and retention rates. Trends in the total qualification distribution have received considerably less attention, due at least in part to a relative lack of data. Drawing on those data that are available, Table 9.1.1 provides an overview for the 1966-1991 period. Because of potentially significant differences in the populations the data pertain to, trends for 1966-1971 (which pertain to the labour force only, aged 15+) and for 1981-1991 (which pertain to the total population aged 15+) are treated

separately. Also in 1971, census data were published in tables that make it impossible to construct percentage distributions comparable to those for 1966 (i.e. 'no qualifications' in 1971 meant no school or university qualifications, but included 'other' qualifications that were not derived from university). As a result it is difficult to make any definitive comment about trends for the first period, other than noting that for all groups there were declines in the proportions with no qualifications, and increases in the proportions with qualifications, that were greater for non-Maori. That is to say, despite absolute improvements for Maori in every category, the percentage point gap between Maori and non-Maori increased. Between 1981 and 1986, a sizeable improvement in the ethnic differential occurred for males in the 'secondary school qualifications' category, but no such trend was evident in any other category for either males or females. The positive trend for males in 'secondary school qualification' continued between 1986-1991, joined by improvements in the 'still at school/no qualifications', and 'other tertiary qualifications' categories for both males and females.

Figure 9.1.1 summarises these trends as indices of dissimilarity, showing that between 1981 and 1991, the indices for both sexes peaked and then fell slightly, the figure for males ending the period at 99 per cent of its 1981 level, but that for females at 107 per cent of its 1981 level. At the rate of change experienced between 1986-1991, 0.38 of a percentage point per annum for males and 0.22 for females—and assuming that this very recent trend towards equality continues—the data imply a period to parity of approximately 65 years for Maori males and 95 years for females, all else remaining the same. However, they also suggest that a five-year trend is not a good basis for such a projection.

Importantly, the declines in the IDs between 1986 and 1991 cannot be seen without a caveat that there were increases in ethnic inequality *within* the 'still at school/no qualifications' category, by far the largest category for Maori, in 1991 accounting for more than half of Maori of both sexes. That is to say, in 1981, Maori males were proportionately 1.5 times more likely than their European counterparts to be in this category, whilst by 1986 and 1991 they were respectively 1.80 and 1.85 times more likely (refer Table 9.1.1). Similarly, Maori females in 1981 were 1.4 times more likely than their European counterparts to be in this category, in 1986, 1.5 times, and in 1991, 1.6 times. As implied earlier, this increase may be a function of ethnic differences in age structure, to which the analysis now turns.

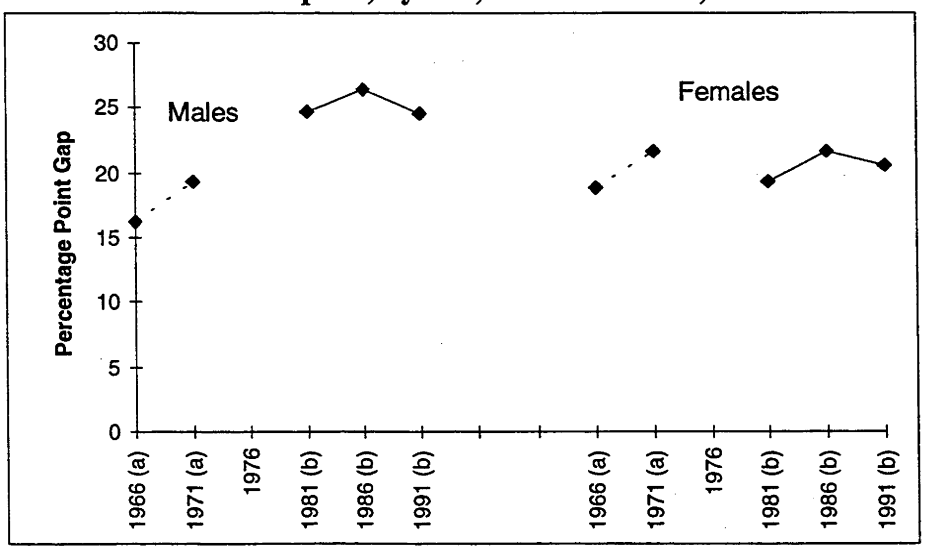
Table 9.1.1
Percentage Distribution and Index of Ethnic Dissimilarity for Highest Educational Qualification, Maori and Non-Maori/European, by Sex, Selected Years, 1966-1991

	MALES					FEMALES				
	1966	1971	1981	1986	1991	1966	1971	1981	1986	1991
	(a)		(b)			(a)		(b)		
NON-MAORI/EUROPEAN										
No Qualifications/Not Specified*	79.14	73.92	46.79	34.47	28.79	71.80	66.53	52.26	41.45	32.63
Secondary School Qualifications	12.33	20.99	25.93	26.10	26.67	19.37	30.91	27.87	31.29	33.63
Other Tertiary Qualifications**	4.72	...	21.69	31.93	36.33	7.20	...	17.09	22.92	28.32
University Qualifications***	3.81	5.09	5.59	7.50	8.22	1.62	2.56	2.78	4.34	5.41
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	694732	734788	888666	978654	1010703	265931	313069	899589	998049	1052556
Not Specified (Excluded)	...	...	78192	40635	24369	...	...	98271	61833	36012
MAORI										
No Qualifications/Not Specified*	95.43	93.28	71.53	60.89	53.30	90.73	88.21	71.56	63.12	53.23
Secondary School Qualifications	3.13	6.24	18.68	19.97	21.34	4.70	11.63	21.48	24.18	25.79
Other Tertiary Qualifications**	1.15	...	8.84	17.67	23.47	4.45	...	6.51	11.76	19.60
University Qualifications***	0.29	0.49	0.95	1.47	1.88	0.12	0.15	0.45	0.94	1.39
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	43699	50103	97899	113577	125490	14514	20793	98364	116085	132975
Not Specified (Excluded)	...	...	12186	7941	6201	...	...	13602	9564	7041
PERCENTAGE POINT GAP (European minus Maori)										
No Qualifications/Not Specified*	-16.30	-19.36	-24.74	-26.42	-24.52	-18.93	-21.68	-19.31	-21.68	-20.60
Secondary School Qualifications	9.20	14.75	7.24	6.12	5.32	14.67	19.27	6.39	7.11	7.84
Other Tertiary Qualifications**	3.57	...	12.85	14.26	12.86	2.75	...	10.58	11.17	8.73
University Qualifications***	3.52	4.60	4.64	6.03	6.33	1.50	2.41	2.33	3.40	4.03
INDEX OF DISSIMILARITY	16.30	19.36	24.74	26.42	24.52	18.93	21.68	19.31	21.68	20.60

Notes: (a) Maori and Non-Maori, Labour Force Only (15+ years); Includes Qualifications Not Specified.
(b) Maori Ethnic Group and European, Population aged 15+ years.
* 1966-71 = No Qualifications plus Qualifications Not Specified; 1981-1991 = No Qualifications/Still at School.
** 'Other Tertiary' data for 1971 included amongst other three categories.
***1966-1971 = All University Qualifications; 1981-1991 = Bachelors / Post Graduate Qualifications Only.

Source: (a) *Census of Population and Dwellings*
(b) Database B

Figure 9.1.1
Index of Ethnic Dissimilarity for Highest Educational Qualification, Maori and Non-Maori/European, by Sex, Selected Years, 1966-1991



Source and Notes: Table 9.1.1

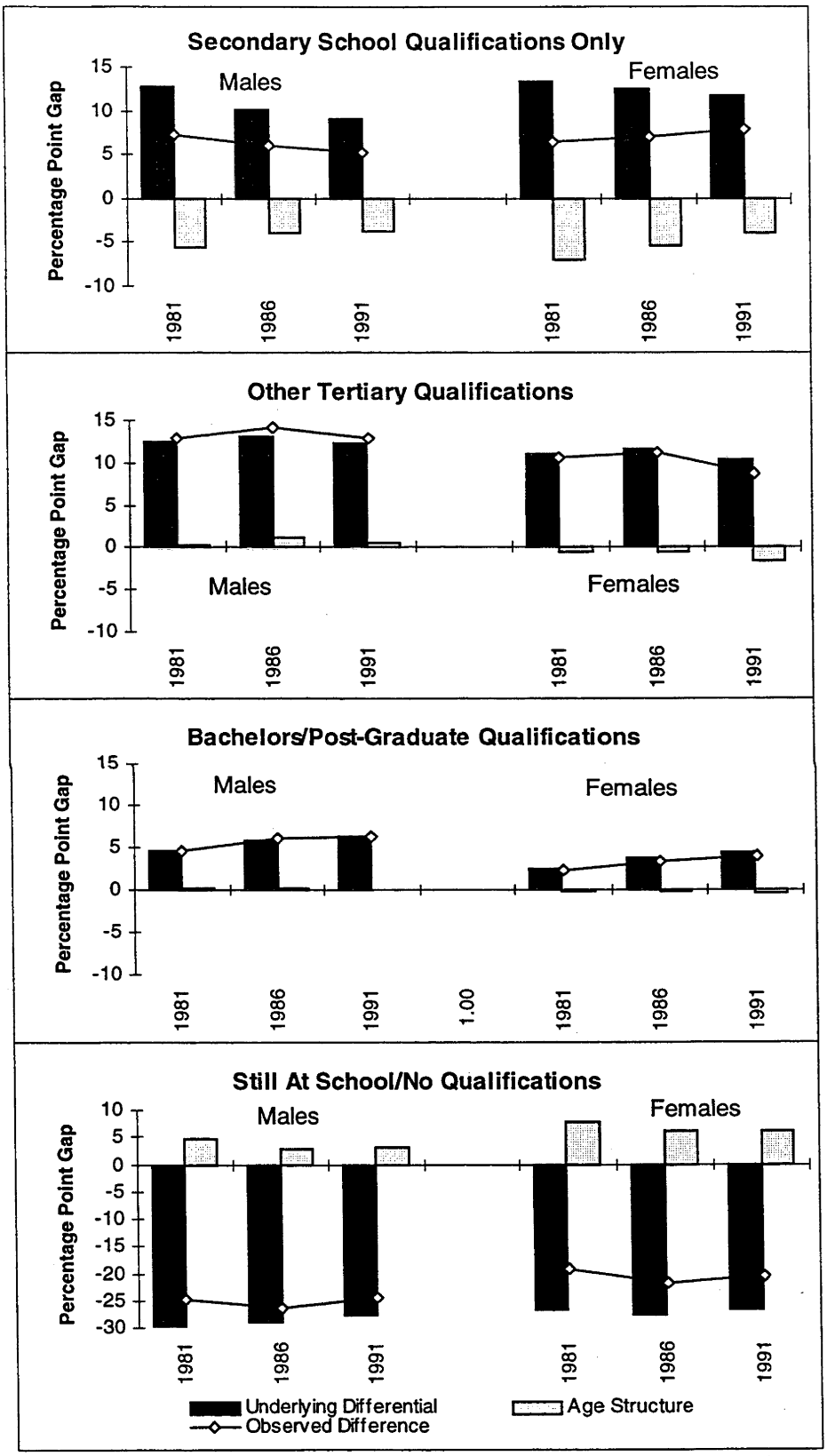
9.2 QUALIFICATIONS AND AGE STRUCTURE

Component analysis of data for the period 1981-1991, shown in Figure 9.2.1, reveals that the greatest effects from age structure occur in the 'secondary school qualifications' category. For both males and females, the more youthful Maori age structure has a considerable offsetting effect on the underlying (true) differentials (which favour European at all observations), causing the observed (crude) differential for males in 1991 to be more than 40 per cent lower, and that for females, more than one-third lower, than it would be if the two populations had the same age structure. That is to say, the more youthful age structure of the Maori population has simultaneously aided the observed level of Maori qualifications in this category, whilst concealing the true extent of European advantage.

Nevertheless, both the underlying differentials and the effects of age structure (as a proportion of the underlying differentials) in the secondary school category declined across the period for both sexes, the former more so for males, and the latter more so for females. Importantly, the trend in the underlying differentials for females runs counter to that implied by the observed differentials, which increased across the period by 1.45 percentage points (23 per cent), and which would have been implicated in the overall increase in the ID. The trend in the underlying differential for males also falls fractionally more than the observed trend. The conclusion must be, therefore, that although the underlying differentials for both sexes are somewhat greater than implied by the crude measures, Maori of both sexes, but especially females, made greater gains in the 'secondary school qualifications' category than was otherwise apparent, as a result of age structure.

In both the 'other tertiary' and 'bachelors/post-graduate' categories—although more so in the former—European males gained a small advantage from age structure at all observations, adding to consistently higher underlying differentials in their favour, and slightly inflating the observed differentials. For females, by contrast, a small advantage from age structure accrued to Maori, marginally offsetting the underlying differentials, which consistently favoured European. These results indicate that there is fractionally less underlying inequality between males in each of these categories than is apparent from the crude measures, but slightly greater for females, the Maori age structure very slightly—although increasingly—aiding Maori female levels of these qualifications, whilst simultaneously concealing the true extent of European advantage.

Figure 9.2.1
Component Analysis of Ethnic Differentials for Highest Educational Qualification, Maori and European Populations Aged 15+ Years, by Sex, 1981-1991



Notes: Different scales for 'qualifications' and 'no qualifications' categories.
Source: Database B (see Appendix G.1.1)

For both sexes, the underlying differentials in the 'other tertiary' category ended the period a little below their 1981 levels, after having increased slightly between 1981 and 1986. By contrast, the underlying differentials for the bachelors/post-graduate category rose across the period, those for males rising some 40 per cent, and those for females, 80 per cent.

The role of age structure in producing these trends was complex, that of European males, for example, adding to the increase in inequality for males with an 'other tertiary' qualification between 1981 and 1986, but then reducing in effect, thereby contributing to the small decline in inequality between 1986 and 1991. However, more pertinent than detailing each such perturbation is that the age-advantage accruing to European males in both higher qualification categories reduced between 1986 and 1991, whilst the offsetting effect arising from the Maori female age structure increased. This situation has important implications for interpreting overall trends. Apparently, the Maori female age structure, which is younger than that of European females but a little older than that of Maori males, is currently optimal (or approaching optimality) for the gaining of higher qualifications. These increasingly positive effects can therefore shortly be expected to similarly advantage Maori males. That is to say, because the Maori male age structure is also slowly maturing, a similar advantage from the age-effect can be expected in the near future, over and above any 'real' gains.

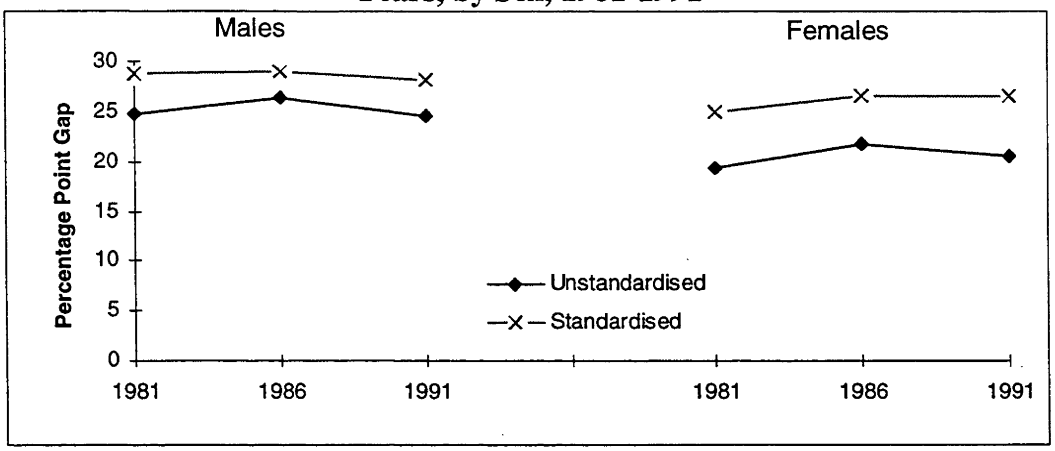
Interpretation of the 'still at school/no qualifications' category is rendered somewhat more difficult by the fact that it conflates those still at school—overwhelmingly those in the 15-19 year age group, who are disproportionately Maori—with those who have no qualifications *per se*, more likely at the older end of the age distribution where European predominate. However, the age-effect shows that whilst the older European age structure predisposes European to being in this category, it is Maori who experience the higher proportions. The disproportion of Maori in this category is thus not due to higher proportions being 'still at school', which would have shown an age-effect for Maori, but rather, reflects those with no qualifications *per se*. Furthermore, not only has there been very little change in the underlying differentials across the period (albeit a small decline), but the true extent of Maori disadvantage is partially concealed by the offsetting effects of the European age structure. In 1991, these effects reduced the underlying differential for males by more than 11 per cent, and for females by almost 23 per cent.

Also concealed by the effects of age structure in the 'still at school/no qualifications' category is that where, for females, the observed differentials indicate a small (1.3 percentage point) overall increase in ethnic inequality, the underlying differentials show a fractional decline. For males, a 0.2 percentage point overall decline in the observed differentials is also somewhat smaller than that indicated by the underlying differentials, which fell by 2.0 percentage points (7 per cent). Thus it can be concluded that whilst ethnic inequality in this category is somewhat greater than indicated by the observed values, and more so for females than for males, it is also declining at a more rapid rate than would superficially appear to be the case.

As with the component analyses of the previous chapters, the age-effects differ by category (as well as by period and sex), and are mutually compensating between categories. Because the size of each category is not taken into account, these effects become conflated when aggregated. Nevertheless, when age-standardised indices of dissimilarity are computed and compared with their unstandardised equivalents, as in Figure 9.2.2, it can be seen that the Maori age structure has had a sizeable deflating (advantageous) effect on the ethnic differential at each observation. For males, the effect ranges between 10 and 16 per cent across the period (15 per cent in 1991), and for females, between 23 and 30 per cent (30 per cent in 1991). In addition, between 1986 and 1991, the unstandardised indices show a slightly greater decline (and hence a reduction in the percentage point gap between Maori and European) than the age-standardised indices, indicating that the Maori age structure has assisted in producing the recent—albeit minute—reduction in Maori and European differences. Indeed, if Maori females had had the same age structure as European females, the ID for females would have increased between 1986 and 1991.

Overall, these outcomes have occurred because if the Maori population had the same age structure as European, the proportion with secondary school qualifications would be lower, and the proportion with no qualifications would be higher. That said, since qualifications gained reflect a permanent change of status, it is important to note they cannot be lost as the age structures of the two populations move towards convergence. That is to say, by contrast with the changing 'shift-share' effects of labour force and employment status, and industrial and occupational distribution, where individuals can move in and out of the various categories, the case of qualifications is different because the categories are essentially unidirectional in nature: one cannot move from a higher category back into a lower one.

Figure 9.2.2
Comparison of Standardised and Unstandardised Indices of Ethnic Dissimilarity for Highest Educational Qualification, Maori and European Populations Aged 15+ Years, by Sex, 1981-1991



Notes: Data for Maori standardised to age structure of European population.
Source: Database B (see Table 9.1.1 and Appendix G.1.1)

9.3 QUALIFICATIONS AND COHORT DIFFERENTIALS

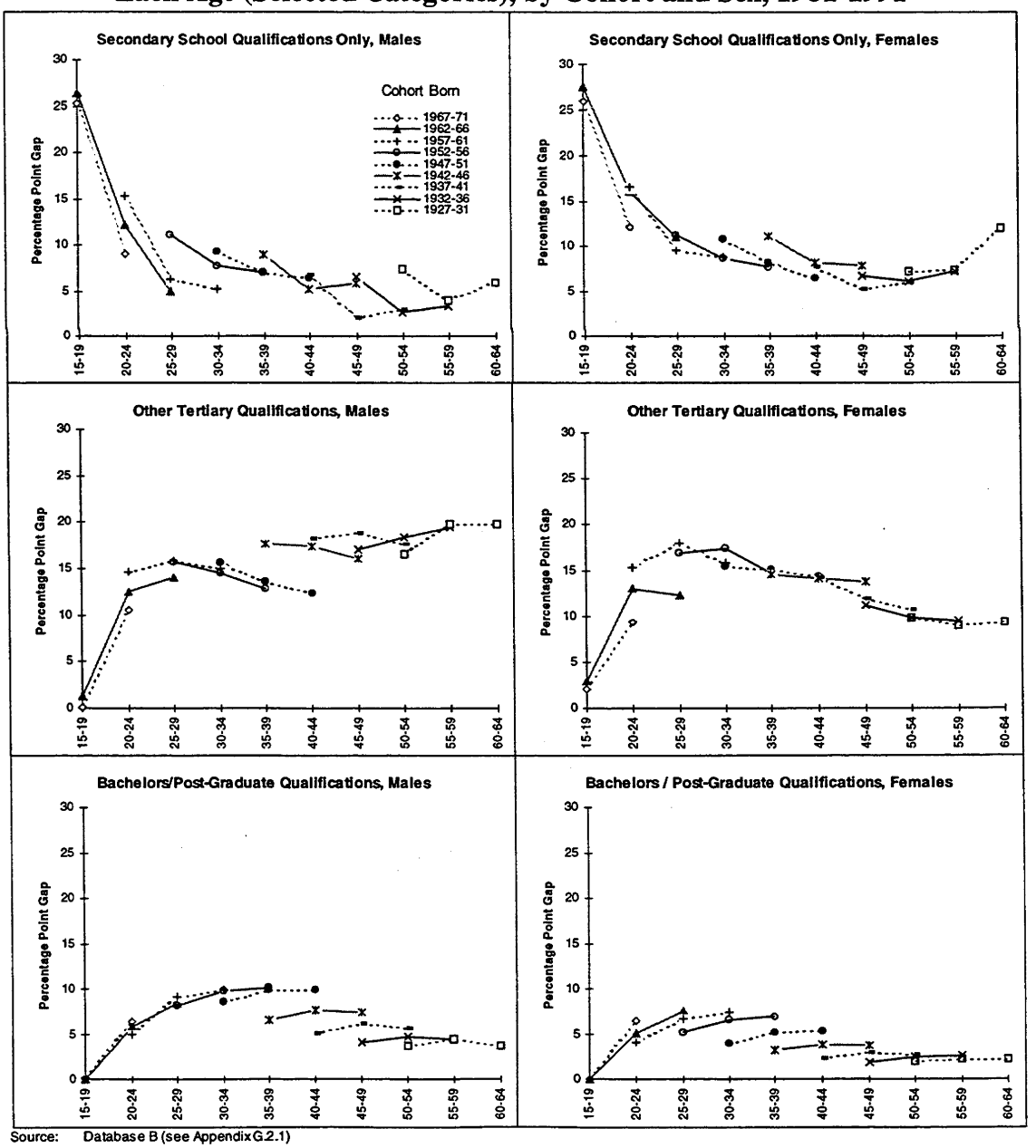
The age-specific data underlying the foregoing component analysis are presented by cohort in Figures 9.3.1 and 9.3.2. Trends are based on the percentage point gap between European and Maori at each age, positive values denoting higher levels of the qualification for European, negative values denoting the same for Maori.

At first sight, data for the 'secondary school qualifications' category, given in Figure 9.3.1, reflect the situation shown above, where small declines in the underlying differential for this category were identified for both sexes, and for successive calendar years. These data show strong intra-cohort declines in inequality, especially for the more recently born. Similarly, there is a reduction in the gap between Maori and European cohorts at each successively older age, for each more recently born cohort, indicating inter-cohort improvements as well.

Although the data are incomplete in terms of the full life-cycle, the patterns and trends suggest the existence of a progression to further qualifications. That is to say, because each category represents the highest qualification held, secondary school qualifications are for many people a transitional category, attained at the younger ages and then superseded by the gaining of additional qualifications. However, as a result of this phenomenon, a decline in the gap between two populations can occur in one of three ways: a faster increase in the proportion gaining of the qualification by the group

that previously had the lower proportions; a higher rate of transition out of the category by the group that previously had the higher proportions; or a combination of the two. In fact the major cause of the improvements in this qualification category (with the exception of that at 15-19 years) has been a higher rate of transition out of the category by European. This is especially true for European males, evidenced in part by increases in intra-cohort inequality across the life cycle for many of the cohorts in the two other qualification categories shown in Figure 9.3.1 ('other tertiary' and 'bachelors/post-graduate'), and in part by the absolute trends underlying these relativities (see Appendix G.2.2).

Figure 9.3.1
Percentage Point Gap Between European and Maori in Highest Qualification at Each Age (Selected Categories), by Cohort and Sex, 1981-1991



Source: Database B (see Appendix G.2.1)

That said, with regard to the 'other tertiary qualification' category it is also important to note that for several other cohorts, there have been reductions in both intra- and inter-cohort inequality. However, the pattern is somewhat more complex than that for the secondary school category, and differs by sex, especially amongst the older cohorts. For males, each more recently born cohort which was born since the 1940s has experienced lower inequality at each age than its predecessor. For males born during the 1940s and 1950s there is also a clear decline in both intra- and inter-cohort inequality across the life cycle, with each more recently born cohort experiencing lower inequality than its predecessor. However, the opposite is true for male cohorts born 1927-31 and 1932-36, for which both the highest levels of inequality and a general increase over the life cycle are evident.

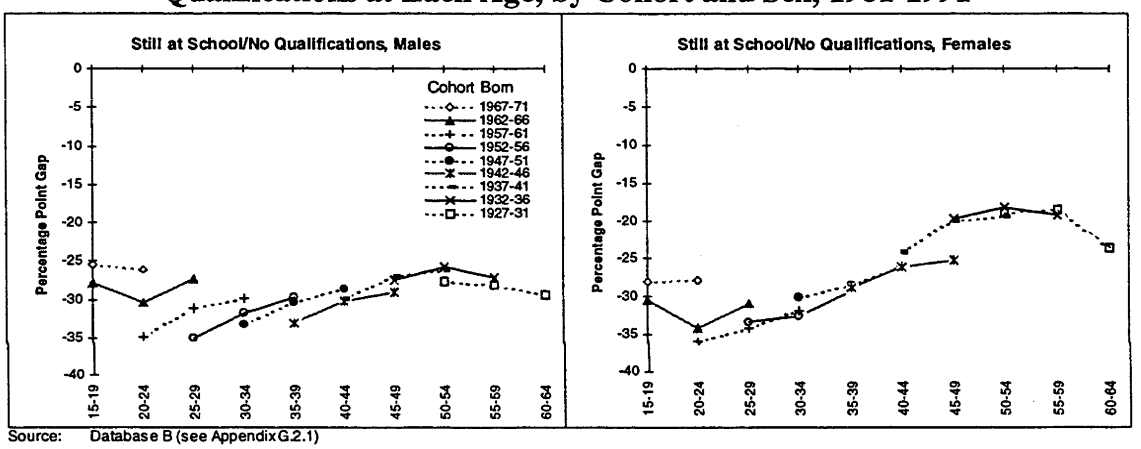
For females, only the two most recently born cohorts show clear evidence of an improvement over their predecessor at each successive age (a reduction in inter-cohort inequality), whilst at the same time showing an overall increase in intra-cohort inequality. Each successively earlier born cohort, on the other hand, has tended to have higher levels of inequality than its predecessor, but at the same time to show a decline in inequality across its life cycle (a reduction in intra-cohort inequality). Thus, where cohort inequality for males in this qualification category is positively related to age, the earliest born cohorts experiencing the greatest inequality, for females inequality is greatest for those born in the 1940s and 1950s.

By contrast, data for the bachelors/post-graduate category show very clearly that all cohorts of both sexes born since the 1940s have experienced greater inequality than their predecessors, the most recently born cohorts (those born during the 1950s and 1960s) being far more unequal than the generations to which their parents belong, the cohorts born in the 1920s and 1930s. This increase in both intra- and inter-cohort inequality is especially evident for females, for whom—although experiencing lower levels of inequality *per se* than males—not only does the percentage point gap for each more recently born cohort increase at each age, but inequality across the life cycle also increases to a greater extent than for males.

The corollary of the above trends is found in the 'still at school/no qualifications' category, data for which have negative percentage point gaps between European and Maori because Maori have the higher proportions in this category, and which are shown separately in Figure 9.3.2. Clearly evident is a reduction in the ethnic differential (i.e. it becomes less negative) at each successively older age for the most recently born cohorts

of both sexes, and across the life cycle for all but the earliest born cohorts, which show a small increase in inequality (i.e. it becomes more negative). Ethnic inequality is greatest for males born in the 1940s and 1950s, and for females born in the 1950s and early 1960s. Indeed, perhaps surprisingly, for this category it is the earliest born cohorts, whilst having the highest levels of persons with no qualifications, which also have the lowest levels of inequality. This is especially so for females, for whom the more universal pursuit of educational qualifications has been a relatively recent phenomenon, *vis-à-vis* males, supporting sociological arguments that education *per se* is not a panacea for eliminating inequality.

Figure 9.3.2
Percentage Point Gap Between European and Maori Still At School or with No Qualifications at Each Age, by Cohort and Sex, 1981-1991



Source: Database B (see Appendix G.2.1)

9.4 QUALIFICATIONS AND LABOUR FORCE STATUS

Comparing crude educational qualifications with crude labour force status for the population aged 15-64 years suggests that reductions in ethnic inequality in the former do not greatly ameliorate ethnic inequalities in the latter. For example, as Table 9.4.1 shows, Maori males with a bachelors/post-graduate qualification in 1981 were slightly less likely than their European counterparts to be unemployed, whilst by 1991 they were considerably more likely to be so. Similarly, in 1981, Maori males with these qualifications were only slightly less likely than their European counterparts to be employed full-time, whilst by 1991 they were considerably less likely to be so. Furthermore, as Table 9.4.1 shows, the magnitude of deterioration in unemployment for Maori *vis-à-vis* European males with these qualifications was considerably greater

(minus 16 per cent) than that for unemployment in any other qualification category. Although the more youthful Maori age structure may well be involved in these trends, the latter suggests that they have institutional and/or discriminatory, rather than age-structural, underpinning's.

Table 9.4.1
Percentage Point Differential (European minus Maori) in Each 'Highest Qualification by Labour Force Status' Category, and Index of Ethnic Dissimilarity, Population Aged 15-64 Years, by Sex, 1981-1991

	MALES			Index*	FEMALES			Index*
	1981	1986	1991	1991/1981	1981	1986	1991	1991/1981
STILL AT SCHOOL/NO QUALIFICATIONS								
Full-Time	5.79	9.66	20.72	3.58	0.23	1.96	9.58	41.18
Part-Time	0.90	-1.94	0.72	0.80	8.09	7.39	9.03	1.12
Unemployed	-8.30	-7.73	-9.48	1.14	-5.55	-6.99	-6.32	1.14
Not in the Labour Force	1.61	0.01	-11.97	-7.45	-2.77	-2.36	-12.30	4.45
SECONDARY SCHOOL QUALIFICATIONS ONLY								
Full-Time	1.71	4.16	13.70	8.03	0.28	1.19	7.26	26.31
Part-Time	0.83	-1.41	0.94	1.13	5.09	4.54	6.85	1.35
Unemployed	-3.18	-4.12	-7.43	2.33	-3.35	-5.34	-6.37	1.90
Not in the Labour Force	0.65	1.37	-7.21	-11.14	-2.01	-0.40	-7.74	3.85
OTHER TERTIARY QUALIFICATIONS								
Full-Time	-0.23	3.42	16.37	-69.77	-8.68	-6.02	7.48	-0.86
Part-Time	0.19	-1.43	-0.40	-2.09	6.29	7.00	8.61	1.37
Unemployed	-1.13	-3.28	-10.13	9.01	-2.22	-4.49	-9.00	4.06
Not in the Labour Force	1.17	1.29	-5.83	-4.99	4.60	3.51	-7.09	-1.54
BACHELORS/POST-GRADUATE QUALIFICATIONS								
Full-Time	3.97	4.26	10.31	2.60	-6.53	-8.22	-0.94	0.14
Part-Time	-2.27	-1.19	-0.94	0.42	2.44	6.81	6.57	2.70
Unemployed	0.25	-1.66	-4.17	-16.45	-2.12	-4.15	-2.68	1.26
Not in the Labour Force	-1.96	-1.41	-5.20	2.66	6.22	5.56	-2.95	-0.47
INDEX OF DISSIMILARITY (Percentage European minus percentage Maori)								
Still at School/No Quals.	8.30	9.67	21.45	2.58	8.32	9.35	18.61	2.24
Secondary School Quals.	3.18	5.53	14.64	4.60	5.36	5.73	14.11	2.63
Other Tertiary Quals.	1.36	4.71	16.37	12.04	10.89	10.52	16.09	1.48
Bachelors/Post-Graduate	4.22	4.26	10.31	2.44	8.66	12.38	6.57	0.76

Notes: *1991 Indexed to 1981 (1981=1.00)
Source: Database B (see Appendix G.3.1)

Maori females with a bachelors/post-graduate qualification (who it should be recalled, were shown above to be slightly older on average than their male counterparts) fared a little better, being considerably more likely than European females to be employed full-time in both 1981 and 1986, and remaining just slightly so in 1991. Although they also (like their male counterparts) became more likely in 1991 than in 1981 to be unemployed than European (though less likely than in 1986), the

deterioration in this index was also not as severe as that for males. On the other hand, where, in 1981, Maori females had been considerably less likely than European to be outside of the labour force, by 1991 they were somewhat more likely to be so. Furthermore, almost all of this latter trend occurred between 1986 and 1991, suggesting the involvement of factors such as the 'discouraged worker' effect noted in Chapter 7. The contention is further supported by a similar trend between 1986 and 1991 for males in this qualification category.

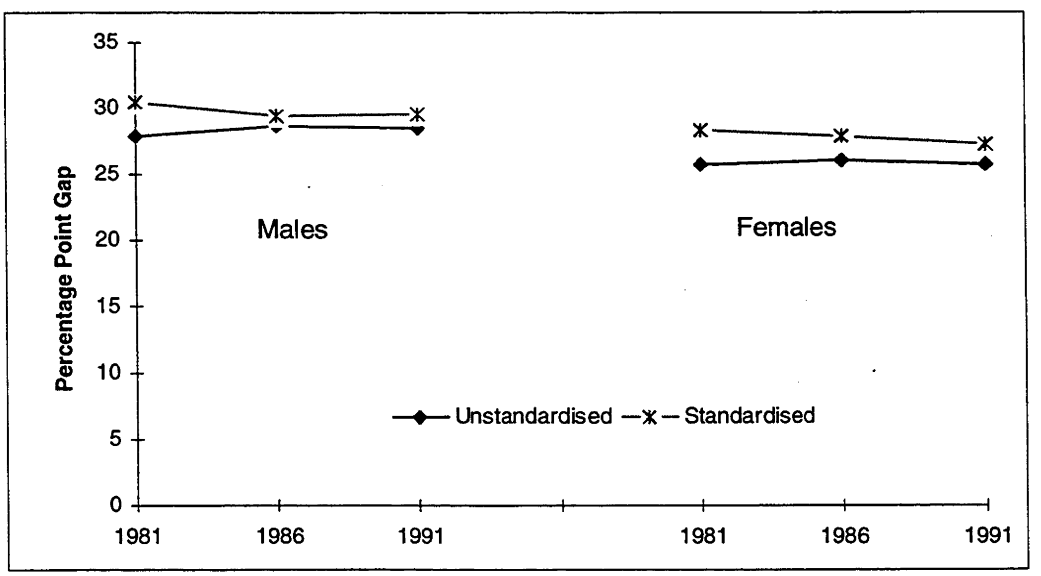
For those with a bachelors/post-graduate qualification, the overall result of these trends was a more than doubling of the index of dissimilarity for males (from 4.2 to 10.3 percentage points), most of the increase occurring between 1986 and 1991; against a 24 per cent decline in the index for females (from 8.6 to 6.6 percentage points), albeit the latter having first increased quite dramatically between 1981 and 1986. This category for females was, however, the only 'qualification by labour force status' category to show an overall decline in the index of dissimilarity for either sex, although in no such category did that for females increase to the same extent as that for males.

This disparity by sex was particularly evident in the 'other tertiary qualifications' category, the index of dissimilarity for which saw a 48 per cent increase for females, but a massive 12-fold increase for males. Given that the category in 1991 pertained to more than one-fifth of Maori males and more than one-third of European males, the magnitude of the increase is of considerable significance. Of particular note was a shift for Maori males with these qualifications from being slightly more likely than European males in 1981 to be in full-time employment, to being substantially less likely to be so in 1991, whilst the opposite was the case for those not in the labour force (Maori males in 1981 being slightly less likely than European to be outside of the labour force, and in 1991, considerably more likely to be so). So too was there a sizeable increase between 1981 and 1991 in the proportion of Maori of both sexes with this qualification who were unemployed. Indeed, Maori with these qualifications experienced higher unemployment in 1991 than did Maori in any other qualification category, whereas this had not been the case in 1981. The findings thus suggest both a qualitative difference in the type of qualifications held *within* this rather broadly-defined category, and a relative decline in demand by employers, for those held by Maori.

The extent to which ethnic differences in age structure played a role in producing these differentials and trends is summarised in Figure 9.4.1, which compares age-standardised and unstandardised indices of dissimilarity for the entire 'qualification by

labour force' distribution (that is, both qualifications and labour force status have been simultaneously standardised for age structure). Although the Maori age structure can be seen to have had a small deflating effect on the percentage point gap, and hence an advantageous effect on the ethnic differential at each year of observation for both sexes, trends in the standardised index show that this effect has also been mitigating against a small decline in inequality across the period (the standardised index falling slightly; the unstandardised index showing very little change). That is to say, if the Maori working age population had the same age structure as its European counterpart, ethnic inequality would be slightly higher, but it would also be declining, albeit by a single percentage point only across the entire 1981-1991 period. In 1991, almost 28 per cent of males (almost 30 per cent when age-standardised), and almost 26 per cent of females (27 per cent when standardised), would have needed to change categories in order for the qualification by labour force distributions of the two populations to equalise. The findings thus extend to 1991 arguments advanced almost two decades ago by Wilson (1979), and more recently by Messina et al. (1992:97) who observed patterns to 1980, and show that, despite improvements in the relative proportions of Maori with qualifications, ethnic disparities in labour force status continue to grow—or at least fail to decline substantially.

Figure 9.4.1
Comparison of Standardised and Unstandardised Indices of Ethnic Dissimilarity for 'Highest Qualification by Labour Force Status', Maori Ethnic Group and European Populations Aged 15-64 Years, by Sex, 1981-1991



Notes: Data for Maori standardised to age structure of European population.
Source: Database B (see Appendix G.3.2).

9.5 SUMMARY

Ethnic differentials in New Zealand's educational qualification distribution (*per se*) are diminishing only very slowly. Between 1966 and 1986, the crude indices of dissimilarity for both sexes increased, falling only in the 1986-1991 period, and then by only a small proportion. At the end of that period, one quarter of Maori males and one fifth of Maori females aged 15+ years would have needed to change qualification categories for their qualification distribution to equal that of European. At the rate of improvement experienced in the 1986-1991 period, 0.38 of a percentage point per annum for males and 0.22 for females, the achievement of parity would appear to be as far away as 65 years for males and 95 years for females, all else remaining equal.

However, by way of a caveat to these findings, the Maori age structure was shown to have had a sizeable deflating effect on the crude index for each sex (and hence an advantageous effect for Maori), causing the index to appear lower than it would if the age structures of the two populations were the same, and it also seems to have played a small role in producing the decline between 1986 and 1991. In addition, age-effects within the higher qualification categories for females suggested that some small gains over and above any 'real' (underlying) gains can be expected for the Maori male population in the near future. Three factors support this contention. First, the age structure of the Maori population predisposed it to the gaining of secondary school qualifications across the 1981-1991 period, albeit at a decelerating rate, which was greater for females than males. Second, European males gained a small advantage from age structure in the higher qualification categories ('bachelors/post-graduate; and 'other tertiary'), but this effect was also declining; whilst for females in these categories it was Maori who gained a small advantage from age structure, and this effect was increasing. Since the Maori male population is a little younger than that of Maori females, and since the findings suggest that the Maori female age structure is currently optimal (or approaching optimality) for the gaining of higher qualifications, it can be expected that the Maori male age structure will shortly follow suit. Third, the European age structure predisposed it to being in the 'no qualifications' category, whilst partially concealing the true extent to which Maori of both sexes, but particularly females, remain concentrated in the category. However, since qualifications gained are essentially permanent gains (one does not move from a higher to a lower category), it is unlikely that the relative

proportion of Maori in the category will increase, despite the fact that the increasing maturation of the Maori age structure might suggest such.

Nevertheless, this is not the same as saying that the index of dissimilarity could not yet increase further, as it well could, if, for example, Maori find it disproportionately more difficult than European to gain access to higher qualifications as a result of the recent implementation of 'user pays' policies. Cohort analysis showed that such qualifications, especially 'other tertiary qualifications', are gained not only in the early twenties, but also in the thirties and forties, that is, at ages which imply that tertiary training is less likely to be paid for by parents, suggesting the need for employment to fund that training. As shown in Chapter 7, and reinforced in the present chapter, this possibility has deteriorated for Maori more than for European, and for Maori females more than for European females. Indeed, the findings that the Maori female population gained a small advantage from age structure and that this advantage may shortly be experienced by Maori males should not deflect attention from the fact that (a) Maori females continue to experience the lowest levels of qualifications of all sex-ethnic groups; (b) that the underlying component of ethnic differentials in the arguably-important 'bachelors/post-graduate' category underwent a substantial increase for both sexes, whilst that in the 'other tertiary qualifications' category showed only a fractional decline; (c) that cohort analysis of these categories showed a substantial increase in inequality for more recently born cohorts; and (d) that a large portion of the main contribution to the small decline in ethnic inequality between 1986 and 1991—emanating from the secondary school qualifications category—reflected a greater transition *out* of the category by European of both sexes, secondary school qualifications in effect being for many a transitional category. That is to say, because each qualification category represents the highest qualification held, the gaining of additional qualifications over the life cycle mean that the secondary school category is often superseded between one census and the next, and this occurred for European more than for Maori. Thus, the small improvements to the indices of dissimilarity may be more apparent than real.

This contention was also supported by cohort analysis of the bachelors/post-graduate category, which showed that for both males and females, ethnic inequality is inversely and increasingly correlated with age: the more recently born the cohort, the greater and more rapidly increasing the inequality, both within (intra-cohort) and between cohorts. In the 'other tertiary' category also, substantial increases in intra-cohort inequality also occurred for the most recently born cohorts, similarly showing

that young European have gained these qualifications at a faster rate than Maori. However, in this category, there was also a concomitant improvement in both inter-cohort inequality for the more recently born cohorts (the gap between European and Maori at each successive age being smaller than for the predecessor cohort), and in intra-cohort inequality (inequality across the life cycle) for most middle-aged cohorts. Thereafter substantial differences obtained by sex, inequality being highest and increasing across the life cycle for each successively earlier born male cohort, but being lower and decreasing across the life cycle for each successively earlier born female cohort.

Using the 'no qualifications' category as an indicator of overall inequality at the micro-level, the most recently born cohorts—those born in the late 1960s and currently in their late twenties and early thirties—were shown to have slightly lower levels of ethnic inequality than their immediate predecessors (those born in the 1950s) but generally higher levels than their older predecessors, particularly in the case of females. This finding offers considerable reinforcement to sociological arguments which hold that education is often a cause of inequality (e.g. Nash 1982 on New Zealand). Certainly it seems that as qualification levels have increased, so too has ethnic inequality. However, it must also be acknowledged that those cohorts showing the highest levels of inequality are those born during the baby boom, and thus the very size of their cohorts will be implicated in the maintenance of the index of dissimilarity at a high level. That is to say, the large baby boom cohorts with their greater levels of ethnic inequality will account for a large portion of the index for each sex. Furthermore, small improvements for the most recently born cohorts in all but the bachelors/post-graduate category suggest a very recent improvement for Maori, and imply that it is not education *per se* that causes social differentiation by ethnicity, but differential access to it.

Finally, this suggestion of differential access was given an additional dimension when the qualification data were correlated with labour force status. Particularly notable were relatively greater declines in the proportion of Maori of both sexes with either a 'bachelors/post-graduate' or 'other tertiary' qualification working full-time, and relative increases in the proportion of Maori with these qualifications who were unemployed. Crude indices of dissimilarity for these data, which showed almost no change across the 1981-1991 period, demonstrated that in 1991, more than 28 per cent of males, and almost 26 per cent of females, would have needed to change qualification by labour force categories for the two distributions to be equal. Age-standardisation increased

these proportions at all observations, showing, on the one hand, that the Maori age structure has had a small deflationary effect on inequality across the 1981-1991 period (and hence an advantageous effect for Maori), but on the other, that it has simultaneously mitigated against the (very) small declines that would have occurred for both sexes if the two populations had had the same age structures. Together they show that employment disparities have really not improved despite the improved qualification levels of Maori, thus extending to 1991 similar claims made almost two decades ago by Wilson (1979), and more recently by Messina et al. (1992) who observed trends to 1980.

10

ETHNIC DIFFERENTIALS IN INCOME

10.0 INTRODUCTION

Since 1951, when data on Maori incomes first became available, researchers have regularly established that Maori mean incomes are lower than those of non-Maori/European.[1] Among explanations for the disparities are the differing age, labour force, occupational and educational distributions outlined in the foregoing chapters, as well as racial discrimination (Pierce 1975; Macrae 1976; Douglas and Dyall 1985; Spoonley 1978, 1988) and now largely expired differences in levels and rates of urbanisation, which exposed Maori and European to different forms of industry (Easton 1983b:211).

However, when a sufficiently broad range of these factors is controlled for, the differences in average income have been shown to disappear (Macrae 1976; Brosnan 1984). That is to say, Maori and non-Maori/European workers with the same characteristics have been shown to declare approximately the same average incomes—at least in 1981. This is an enormously important finding, in that, contrary to many popular understandings, it points to the achievement of a very significant form of equality—at least at the disaggregated level, and for those who comprise the employed labour force, a point that will be returned to below.

On the other hand, the relatively few works that examine New Zealand's ethnic income differentials over time record a steady decline in inequality until the late 1970s or early 1980s (Brosnan 1987:98; Easton 1983b:210), and an apparent reversal of those trends since, although the timing and magnitude of the shift differs by study (Messina et al. 1992:101; Johnstone 1996; Easton 1996b:121; Martin 1997a:16 and forthcoming[2]). For Messina et al., drawing on total income distributions for the period 1950-1980, the reversal occurs between 1970 and 1980, and is ascribed to the failure of the Maori educational and occupational distributions to keep apace of those of European. For

[1] Butterworth 1974; Macrae 1976; Easton 1983b, 1994, 1996b; Brosnan 1982, 1984, 1987; Gould 1982; Brosnan and Hill 1983; Hill and Brosnan 1984; Horsfield and Evans 1988; Butterworth and Mako 1989:94-102; Messina, Fraga, Rhodebeck and Wright 1992:101; Johnstone 1996; Martin 1997a:16 and forthcoming.

[2] I gratefully acknowledge Barry Martin's willingness to inform me of the findings of his doctoral research, still in progress at the time of writing, and to provide me with data for the historical overview given in Figures 10.1.1 and 10.1.2 below.

Martin (1997a), the shift begins in the late 1970s-early 1980s, although the precise turning point and the magnitude of the change vary according to which sex, employment status group and measure of inequality is considered.[3] Explanation for the shift is argued to lie in globally-extant technological changes which favour 'high-tech' industries and highly skilled workers, and depress the situation of the low skilled and younger cohorts (Martin 1997a:1, 16-17).[4] According to Easton (1996b:121), drawing on total income data for differing classifications of Maori, the shift is more recent again, occurring as late as 1986 and only for males, although the findings are dependent on ethnic classification. Easton similarly posits the shift as a probable employment effect. There is also the possibility that Maori did not gain to the same extent as non-Maori/European from the wage and salary bargaining of the 1985-1987 period that followed the lifting of the wage-price freeze of 1982-1984. The increase in inequality was not believed by Easton to be an age-effect (Easton 1996b:120), but the issue was not examined empirically in Easton's study due to discontinuities in ethnic classification in the published data.

Accordingly, drawing mainly on Database B (which was explained in Chapter 5 to have a high degree of internal consistency), this chapter undertakes a time-series analysis of ethnic differentials in mean income, examining the effects of age structure, labour force status and educational category by sex, and these factors in varying combinations, for the period 1981-1991. Unfortunately, because occupation is not included in the income database available for this study, the chapter cannot also consider the effects of occupational distribution, argued by Brosnan (1987:100) to account for the greatest proportion of aggregate income disparity. Nevertheless, the present study provides an equally important perspective. Studies such as those by Brosnan et al., which focus on occupational structure, tend to exclude those who are not in employment, shown in Chapter 7 to account for almost half of all Maori males aged 15-64 years in 1991 (against 25 per cent of European males) and almost two-thirds of Maori females of the same age (against 42 per cent of European females). As Brosnan (1981:60) notes, the similar selective removal of nil-income cases from an earlier study may account for the finding that income inequality amongst females over the age of 20 had shifted between 1951 and 1976 from a non-Maori to a Maori advantage. Although

[3] Martin employs five different indices of inequality: the Gini Coefficient, Coefficient of Variation, Theil Coefficient, Mean Logarithmic Deviation, and Variance of the Logarithm.

[4] Both Johnstone and Martin, located at the Population Studies Centre, University of Waikato, New Zealand, drew on the same database, and, not surprisingly, noted similar trends. That database is the same one drawn on for much of this thesis, and described in Chapter 5 as Database B.

similarly focusing on the working-age population only (those aged 15-64 years), the present study therefore extends the analysis to the unemployed and those not in the labour force, and also takes account of the separate effects of full-and part-time employment.

To begin, an overview of historical trends is given. Data for 1981-1991 are then standardised and the contributory effects of each variable and combination of variables to ethnic differences in mean income are examined. Finally, a cohort analysis of a broad range of 'income by labour force status by qualification' categories is undertaken, in which ethnic differences in the age-income curve across the life cycle for the period 1981-1991 are examined. As acknowledged in the earlier chapters, three observations (1981, 1986, 1991) are scarcely representative of the 'life cycle' as such, but, in the absence of longer term data, provide a useful indication of trends.

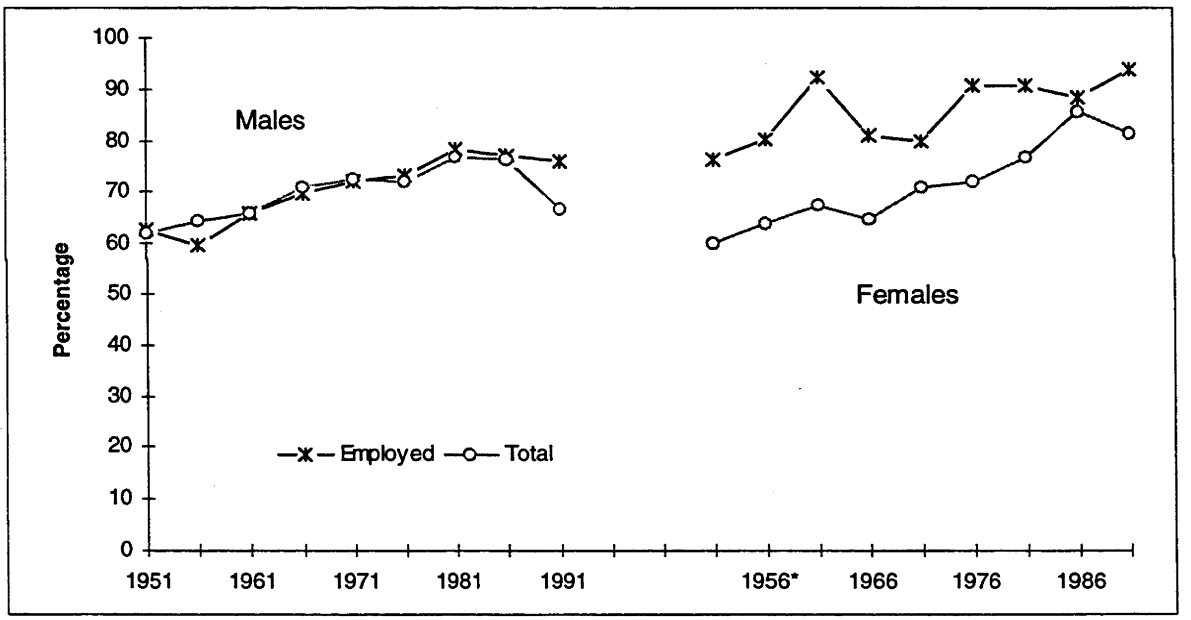
To assist interpretation, two points should be recalled from Chapter 5. First, the data include social welfare benefits, meaning that although the analysis pertains to the income of individuals, the unemployed and 'not in the labour force' categories will strongly reflect government payments relating to family type, size and life cycle stage. Second, income data by hours worked are neither published by ethnicity, nor included in the databases available for this study, and thus this important element of income differentials can be dealt with only by inference from the few cross-sectional studies that have drawn on unpublished data (e.g. Brosnan 1985, Raney 1990, Harris and Raney 1991, Harris 1992).

10.1 HISTORICAL OVERVIEW

The approximate course of the trends discussed above is plotted in Figure 10.1.1, which shows Maori mean income as a percentage of non-Maori mean income, for the employed (full-time plus part-time) and total populations. These and other similar percentage ratios are hereafter referred to as *income relativities*. A high income relativity means that the mean incomes of Maori and non-Maori/European are close, and an increase in income relativity means that the mean incomes of Maori and non-Maori/European are converging. An improvement in income relativity is therefore the same as a reduction in the income differential.

Of particular note is that until 1986, income relativities for males differed very little by whether or not they pertained to the employed or total populations.[5] Those for females show a much greater—albeit steadily declining—difference, also until 1986, when the ratios for the two categories (employed and total populations) almost converged. Thereafter there is a clear divergence between the ratios for the employed and total populations for both sexes. Since 1986, for both males and females, a marked decline in Maori-European income relativities has occurred for the total group, whilst relativities for employed females resume their generally upward trend, and those for employed males decline only slightly.

Figure 10.1.1
Income Relativity: Maori Mean Income as a Percentage of Non-Maori Mean Income, Employed and Total Populations, by Sex, 1951-1991



Notes: In this and all subsequent Figures and Tables, data have been CPI adjusted to $1991.
*Data for 1956 interpolated by Martin.
1951 and 1976-1991: Population aged 15-64 years; 1956-1971: Population aged 15-59 years
Source: Martin 1997, Figure 5 (see Appendix H.1)

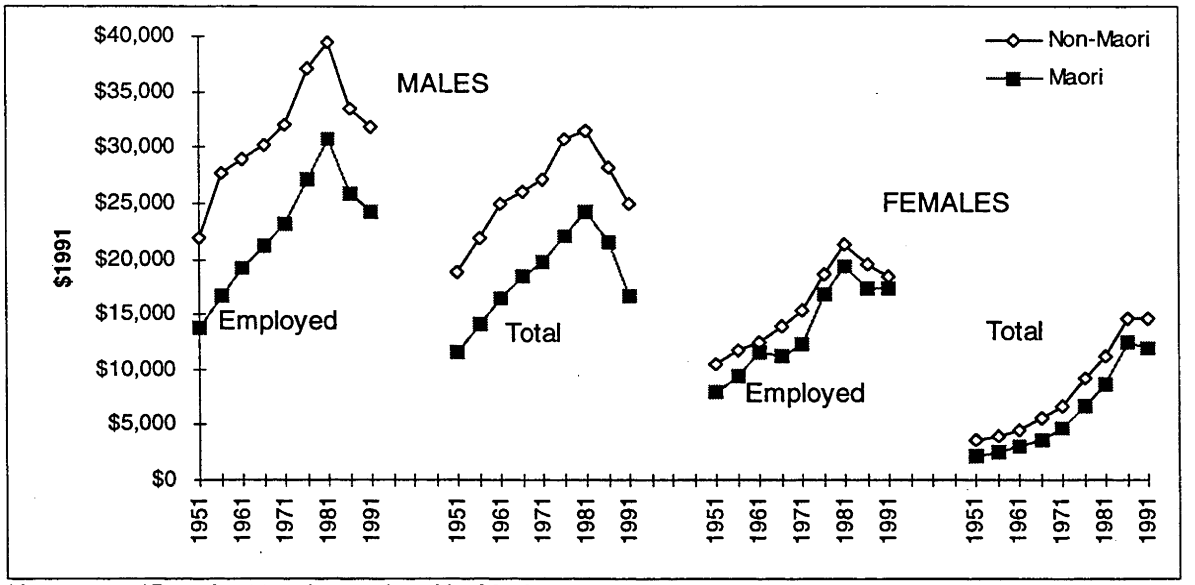
[5] Martin (1997a) refers to these populations as the 'actively engaged' and total populations. However, he notes (p.3) that he has excluded the incomes of the unemployed from those of the actively engaged population, which typically includes employers, the self-employed, wage and salary earners, relatives assisting unpaid and the unemployed. For the sake of clarity, Martin's actively engaged population are referred to here as the 'employed' population.

Also of note is that income relativities for the employed population are considerably higher for females than for males at all observations, the mean income of Maori females in this category in 1991 reaching 94 per cent of that of non-Maori females, considerably above the highest income relativity for males, which occurred in 1981, when the mean income of Maori males reached 78 per cent of that for non-Maori males. By contrast, when the total population is considered, income relativities for males are higher than for their female counterparts in 1951, 1956, 1966, 1971 and 1981.

It is important that these levels not be confused with the fact that mean income for females has been historically, and remains, considerably lower than that for males, albeit having gained some ground over the period in question, due at least in part to a substantial fall in mean income for males, evident in Figure 10.1.2. Indeed, before turning to more disaggregated data, it is extremely important to review the absolute trends underlying those in Figure 10.1.1. As Figure 10.1.2 shows, significant reversals in the direction of trends for the mean incomes of *both* Maori and non-Maori have also taken place, particularly so for males, and their aetiology—undoubtedly related to the structural changes of the past decade and a half[6]—is also likely to be implicated in the general decline in ethnic equality. Between 1981 and 1991, mean incomes for employed non-Maori and Maori males fell by 19 and 21 per cent respectively, whilst for females the declines were 13 and 10 per cent. For the total population, the mean income of non-Maori males declined over the same period by 21 per cent, and that of Maori males by 31 per cent. By contrast, the mean income of all non-Maori females increased by a further 31 per cent between 1981 and 1986, and then levelled off, whilst that of all Maori females increased by 46 per cent and then fell slightly, ending the period 38 per cent above its 1981 level.

[6] See especially Boston and Dalziel (1992); Shirley (1993); Easton 1996b, 1997a, 1997b; Silverstone, Bollard and Lattimore 1996.

Figure 10.1.2
Mean Income for Employed and Total Populations, Maori and Non-Maori (in $1991), by Sex, 1951-1991

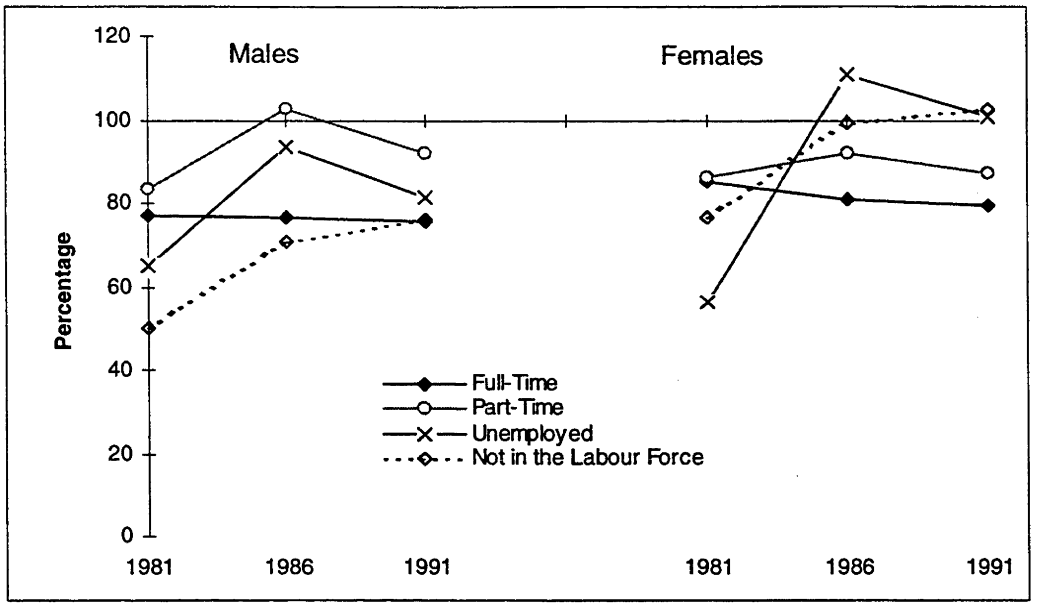


Notes: *Data for 1956 interpolated by Martin.
1951 and 1976-1991: Population aged 15-64 years; 1956-1971: Population aged 15-59 years
Source: Martin 1997, Figure 5 (see Appendix H.1)

10.2 INCOME BY LABOUR FORCE STATUS, 1981-1991

Turning to data disaggregated by labour force status for 1981-1991—and also to the Maori Ethnic Group and European rather than Sole Maori and non-Maori classifications—Figure 10.2.1 shows that the above trends conceal an even more complex situation. Reflecting the trends for employed males, Maori-European income relativities for males employed full-time show very little—albeit also slightly declining—change across the period, whilst those for males who worked part-time first improved dramatically (deriving a small Maori advantage in 1986) and then deteriorated, ending the period only just above their 1981 levels. However, apparently contradicting the situation for employed females shown in Figure 10.1.1, Maori-European income relativities for females employed full-time during the 1986-1991 period are not only lower than those for each other labour force category, but also show a steady decline across the entire 1981-1991 period. Those for females employed part-time show a very small improvement overall, having increased between 1981 and 1986, but they too experienced a decline between 1986 and 1991.

Figure 10.2.1
Income Relativity: Maori Mean Income as a Percentage of European Mean Income (in $1991), by Labour Force Status and Sex, Population Aged 15-64 Years, 1981-1991



Source: Database B (see Appendix H.2)

It would seem that this apparent contradiction between trends in income relativity for employed Maori and non-Maori/European females shown in Figures 10.1.1 and 10.2.1 between 1986 and 1991 relates in part to methodological differences, amongst which are differing ethnic classifications, and in part to shifts in the full-time/part-time balance of female labour force activity towards the latter category, shown in Chapter 7 to have been more pronounced for European than for Maori females. That is to say, since the European female population has a greater proportion than Maori of its numbers employed part-time, and since this proportion underwent a relative increase across the period in question, aggregate mean incomes for employed (full-time plus part-time) European females will have been slightly lowered by that factor, particularly in 1991, causing the income difference between employed Maori and European females in Figure 10.1.1 to have decreased. By contrast, when separated into their full- and part-time components, as in Figure 10.2.1, the true situation can be seen.

For unemployed females, on the other hand, Maori-European income relativities not only show a substantial improvement across the 1981-1986 period, but also a shift to a Maori advantage (i.e. the ratio exceeds 100 per cent). Income relativity then deteriorated across the 1986-1991 period, but only to 100 per cent, and in 1991 remained well above its 1981 level. Very similar trends are apparent for unemployed

males, with the exception that income relativities in 1986 did not quite reach 100 per cent.

Maori-European income relativities for those not in the labour force also improved immensely across the 1981-1991 period, for both sexes, albeit at a decelerating rate between 1986-1991. For females, the overall result was a shift from a European to a Maori advantage (i.e. more than 100 per cent), whilst for males, income relativities for this category showed the greatest change of all four labour force categories, but in 1991 still remained the lowest (most unequal).

These latter trends—those for the unemployed and not in the labour force—imply an increase in benefit income that was greater for Maori than for European of both sexes, and that was especially pronounced during the 1981-1986 period, after which time the situation reversed for those who were unemployed and decelerated for those not in the labour force. Alternatively, or in addition, there may have been a relative increase followed by a relative decrease in the transition of Maori between unemployment/not in the labour force and work over the corresponding periods, a phenomenon known to economists as 'churning'. Typically, European gain from this situation more than Maori (Easton 1994:209; Fletcher 1995:22-34; Maré, 1995:121), but this may not necessarily have been the case at the time of each census. Between the late 1970s and 1985, for example, a broad range of training and government assisted employment programs were implemented, some of which were specifically directed at unemployed Maori, and most of which waxed and waned over time (New Zealand Employment Service 1992). A substantial increase in the minimum wage in 1985 would also have been likely to disproportionately benefit the 1986 annual income of those Maori who had been employed during that period. However, this factor does not appear to have also assisted the relative incomes of Maori employed full-time. Maori also spend longer on unemployment registers than non-Maori, and Maori are more likely to have repeated spells of unemployment than non-Maori. An improvement in relative transition rates and any small income advantage from this factor is therefore unlikely to explain the relative improvements in unemployment income for Maori over the 1981-1986 period, and on to 1991 for those not in the labour force.

More likely, the answer lies in different aspects of the social welfare system, and in their articulation with the differing demographic characteristics of the Maori and European populations. Young Maori, for example, are more likely than young European to be parents and sole parents (Rochford 1993; Jackson and Pool 1994, 1996) and thus

to receive additional benefit income that reflects assistance for dependent children. As noted in Chapter 5, benefit changes across the 1981-1986 period are likely to have especially enhanced the 1986 incomes of those with children, whilst those across the 1986-1991 period would have had the opposite effect on 1991 incomes. So too would the August 1986 shift from benefit payments on a couple-basis to an individual-basis have negatively affected the 1991 incomes of males who previously received such payments on behalf of their female partner, and positively affected those of the relevant females. The latter perhaps explains the slightly greater decline in income relativity for unemployed males than females between 1986 and 1991.

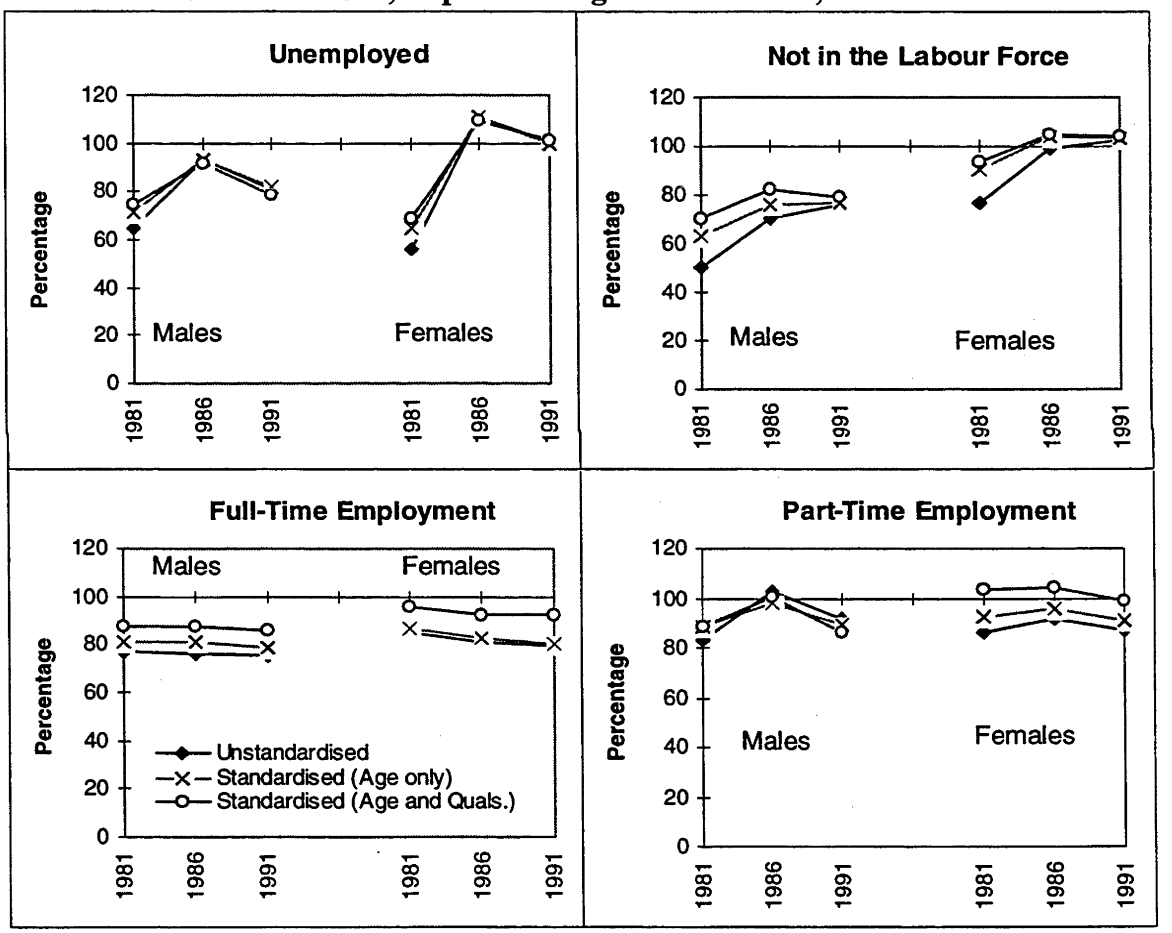
10.2.1 Standardised vs Unstandardised Indices:

An age standardised index is now used to describe the measure of income relativity which is derived when the Maori mean income is standardised to the European age structure and then recalculated as a percentage of the European mean income. Similarly, an age-qualification standardised index is used to describe the measure of income relativity which is derived when the mean Maori income is standardised to the age structure and qualification structure of European and then recalculated as a percentage of the European mean income. The income relativities discussed in the previous section were unstandardised indices, and were calculated from the percentage of mean Maori income to mean European income. In the following discussion, these will be referred to as income relativities or unstandardised indices, or sometimes as observed indices. The term 'observed income differentials' also refers to unstandardised data.

The arguments in the above section are supported when the unstandardised indices are compared with their age-standardised equivalents, shown in Figure 10.2.2. The gap between these two curves indicates the extent to which standardising for age structure reduces (or alters) income inequality. On the one hand, the trend in this gap makes it clear that ethnic differences in age structure played a declining role in producing the observed ethnic income differentials in the unemployed and not in the labour force categories at each successive year. In 1981, the Maori age structure contributed 7 and 9 percentage points respectively to the unstandardised indices for males and females who were unemployed, whilst by 1991 the effect was negligible. For those who were not in the labour force, the corresponding effects were 13 and 14 percentage points in 1981, and similarly were negligible in 1991. On the other hand, the fact that the unstandardised indices for the unemployed between 1981 and 1986, and for

the not in the labour force category between 1981 and 1991, show slightly greater improvements than their age-standardised equivalents is evidence that the Maori age structure (and implicitly, differences in family formation and structure) simultaneously played a small—albeit declining—role in producing the overall improvements. That is to say, if the Maori age structure had been the same as that of European, the improvements would have been less, especially for those who were not in the labour force.

Figure 10.2.2
Income Relativity: Maori Mean Income as a Percentage of European Mean Income (in $1991), Comparison of Unstandardised Indices, and Indices Standardised for Age-, and Age-Qualification Distributions, by Labour Force Status and Sex, Population Aged 15-64 Years, 1981-1991



Notes: Standardised (1): Maori standardised to age structure of European.
Standardised (1): Maori standardised to age and qualification distribution of European.
Source: Database B (See Appendix H.3)

Also shown in Figure 10.2.2 are indices reflecting simultaneous standardisation for age and qualifications. These patterns and trends tell a more complex story, but in general show that ethnic differences in qualifications played a larger role than ethnic

differences in age structure in producing the observed income differentials at each year, especially in the employed labour force (that is, the gap between the indices standardised by age and qualifications and the indices standardised by age is greater than the gap between the indices standardised by age and the unstandardised indices). For males employed full-time, the combined effects of age structure and qualifications did not change across the 1981-1991 period, contributing 11 percentage points to the unstandardised index at each observation. However, within that combined effect, the component due to age structure declined from 4 to 3 percentage points, whilst that due to qualifications increased slightly, from 7 to 8 percentage points. For females who were employed full-time, the combined effect increased from 10 to 13 percentage points, with the component due to age structure declining from 2 to 1 percentage point(s), and that due to qualifications increasing from 8 to 12 percentage points. Thus, for both sexes in full-time employment, the relative decline in unstandardised income relativity, that is, the decline in the mean income of Maori *vis-à-vis* European was driven—at least in part—by an increase in the component due to qualifications, this trend being somewhat more pronounced for females.

Another way of looking at this is to define the gap between 100 per cent (total equality) and the age-qualification standardised index as *unexplained income inequality*. Figure 10.2.2 shows that for males in full-time employment, unexplained income inequality increased from 12 to 14 percentage points, and for females, from 5 to 8 percentage points. That is to say, even if the Maori and European populations had had the same age and qualification distributions, observed income inequality would have increased. Importantly, it is not that the ethnic differentials or their respective increases are very large, but rather, that the trends move in the opposite direction to what might have been expected, especially given the decline in occupational differences shown in Chapter 8. Although it is possible that the trends reflect a relative decline in hours worked for Maori, this factor could not be examined here.

The situation of females employed part-time was quite different, with the contribution to unstandardised income relativity made by ethnic differences in qualifications and ethnic differences in age structure both declining across the 1981-1991 period. The effect from age structure fell from 6 to 4 percentage points, and that from qualifications, from 11 to 8. In this case, however, simultaneous standardisation for age structure and qualifications reveals an ethnic differential that favoured Maori females in both 1981 and 1986, and, although this advantage then declined, in 1991 the

differential sat at 99 per cent. The Maori age and qualification distributions therefore not only completely accounted for the whole of the difference in the unstandardised index, but if Maori females had had the same age and qualification distributions as European females in both 1981 and 1986, they would have had higher mean incomes than European.

On the one hand, the recent trends in this category may reflect a type of 'correction'. As suggested above, there may have been a relative decline in hours worked by Maori. However, on the other hand, when the age- and qualification-standardised trend for 1986-1991 is considered in the context of its equivalent in the full-time category, there remains a suggestion of a relatively deteriorating situation for Maori.

Such a suggestion is reinforced by the patterns and trends in the indices for males who worked part-time. In this category, not only did the age- and qualification-standardised index show first (between 1981 and 1986) an improvement, to unity, and then (between 1986 and 1991) a deterioration of some 14 percentage points, but similar age- and qualification distributions for Maori and European would have resulted in a slightly greater deterioration in Maori-European income relativities between 1986 and 1991 than indicated by the unstandardised index. That is to say, in 1986, the fully standardised index of income relativity for males in this category was 2 percentage points lower than the unstandardised index, whilst by 1991 it was 6 percentage points lower.

Simultaneously, however, the latter finding also reveals that Maori males in this category have enjoyed a small—and increasing—advantage from their age and qualification distributions over their European counterparts. In 1981, ethnic differences in qualifications had no effect on the unstandardised index, whilst by 1991 the qualifications of Maori offset (reduced) it by 3 percentage points, suggesting that Maori males who worked part-time in 1991 were either slightly better qualified than their European counterparts, or received a slightly better income for the same qualifications. Similarly, in 1981, the Maori age structure contributed 5 percentage points to the unstandardised index, at the time accounting for all of the explainable difference. By 1991, the same factor offset the unstandardised index by a further 3 percentage points. Thus, the increase in the unstandardised index between 1986 and 1991 for males in this category was not only all due to unexplained factors, but the true extent of the (albeit

small) increase was concealed by the more advantageous age and qualification structure of Maori.

With the exception of the age-effect (which, as discussed above, was negligible by 1991), similar comments can be directed at the trends for unemployed males. In 1981 the qualifications of Maori contributed 3 percentage points to the unstandardised index. In 1986 and 1991, however, they reduced it by 1 and 3 percentage point(s), thereby concealing between 1986 and 1991 a slightly greater increase in unexplained income inequality than implied by the unstandardised index.

The effect of qualifications on unstandardised income relativity for unemployed females in both 1986 and 1991 was negligible, and thus is not pursued beyond noting that it had played a small role in 1981, and thus had declined across the period.

For those who were not in the labour force, and for whom Maori-European income relativities improved substantially across the entire 1981-1991 period, qualifications, like age structure (the latter of which was discussed above), played a steadily declining role. In 1981, the two components combined improved unstandardised income relativity by 21 and 17 percentage points for males and females respectively (age structure playing the larger role), whilst by 1991 this contribution had declined to 3 and 2 percentage points (with qualifications playing the larger role). However, the age-qualification standardised trend shows a small increase for males between 1986 and 1991. That is to say, if the age and qualification distributions of Maori and European had been the same, males who were not in the labour force would have experienced an increase in unexplained income inequality from 18 to 21 percentage points.

In summary, therefore, the recent reversals in the unstandardised mean income relativities outlined earlier appear to have been driven by the incomes of those *within* the labour force, at first (between 1981 and 1986) being partially offset by improving Maori-European income relativities in the part-time and unemployed categories, but later (between 1986-1991) being exacerbated by declines in both. Although ethnic differences in qualifications clearly played a larger role than ethnic differences in age structure in producing the unstandardised mean income differentials within each labour force category at most observations, in no case would Maori have been protected from the recent (1986-1991) deterioration in Maori-European income relativity by having the same age and qualification distributions as European. Indeed, in two cases (part-time and unemployed males), the age and/or qualification structures of Maori provided a small degree of protection against the deteriorating trend. The finding suggests that

Maori males who worked part-time or were unemployed were either slightly better qualified than their European counterparts, and/or received marginally higher income for the same qualifications. The opposite was the case for both males and females who worked full-time, European (especially females) in this category having either become slightly more qualified and/or having experienced a small relative increase in returns for qualifications, *vis-à-vis* Maori. The recent increase in the unexplained inequality for those of both sexes who were employed full-time, and for males employed part-time may reflect a relative decline in hours previously worked by Maori (a factor which could not be examined here), but it is less likely to reflect ethnic differences in occupational distribution, since this factor was shown in Chapter 8 to have declined across the 1986-1991 period.

By contrast, unstandardised Maori-European mean income relativities for those who were not in the labour force underwent a substantial improvement across the entire period, although the trend decelerated sharply between 1986 and 1991. Again, however, similar age and qualification distributions would not have protected Maori from this deceleration. Indeed, similarity in these factors between 1986 and 1991 would, as for those in employment, have resulted in a small increase in unexplained inequality for males, and a slightly sharper deceleration in the improvement for females. These trends are a likely reflection of ethnic differences in family structure and size *vis-à-vis* the social welfare benefit structure, which, between 1981 and 1986, appear to have enhanced the incomes of Maori *vis-à-vis* European, whilst further policy changes, along with a declining age-effect between 1986 and 1991, appear to have removed much of this advantage. Similar comments apply to trends for the unemployed, although the age-effects in both 1986 and 1991 were so small as to suggest the involvement of additional factors—perhaps a relative decline in the rate of labour market churning for Maori.[7]

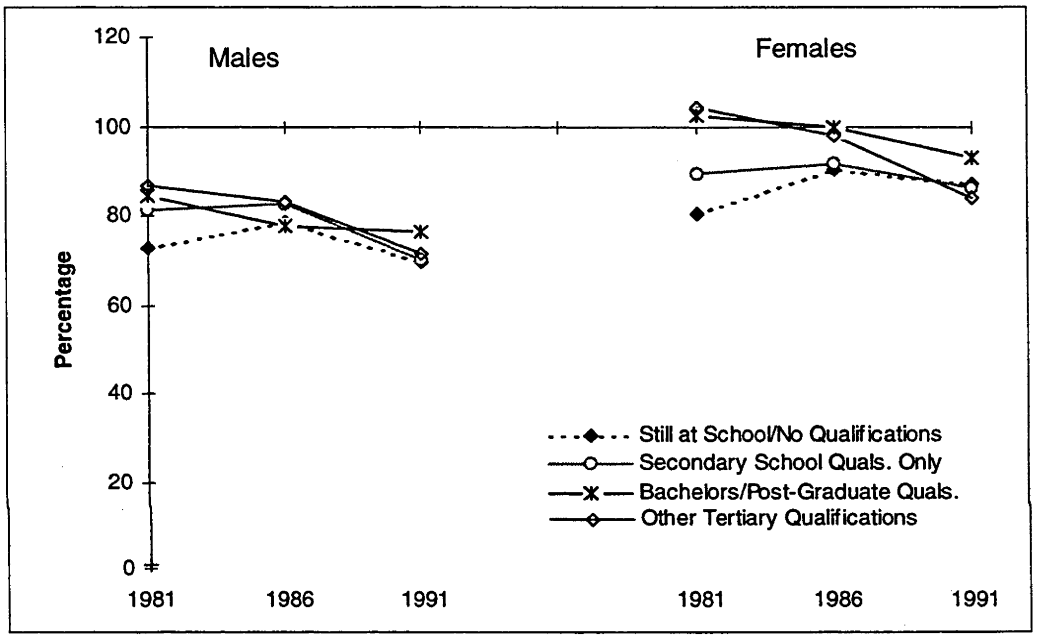
10.3 INCOME BY QUALIFICATIONS, 1981-1991

Reviewing income data disaggregated by qualification category, Figure 10.3.1 shows a pattern of generally declining Maori-European income relativities across the

[7] Unfortunately it is beyond the scope of this thesis to investigate trends beyond 1991, although the issue is returned to in Chapter 12. In the interim, it should be recalled that the arguably severe benefit cuts of 1991, noted in the introductory chapters, were implemented just after the 1991 census, to which the present data pertain. See especially Mowbray (1993), Easton (1994, 1995a, 1997a), Waldegrave and Frater (1995), and Dalziel and Higgins (1996).

1981-1991 period. For two categories ('secondary school' and 'still at school/no qualifications'), however, relativities first rose between 1981 and 1986, and then fell. For males in these categories, the trends resulted in an overall deterioration in income relativity across the period, whilst for their female counterparts, income relativities in 1991 were lower than in 1986, but above their 1981 levels.

Figure 10.3.1
Income Relativity: Maori Mean Income as a Percentage of European Mean Income (in $1991), by Highest Qualification and Sex, Population Aged 15-64 Years, 1981-1991



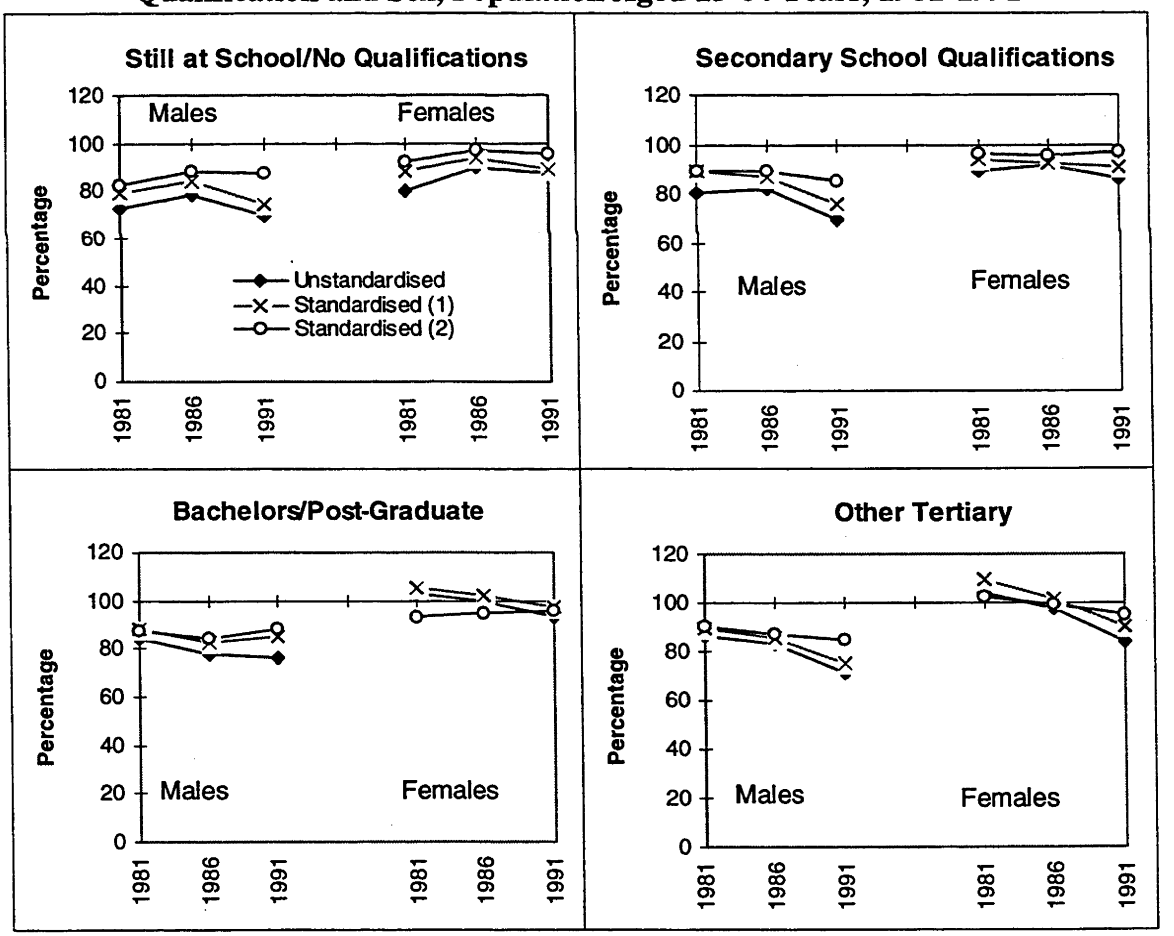
Source: Database B (see Appendix H.4)

Disparities aside, however, it should be noted that there is considerably less overall income differentiation by educational qualification than Figure 10.2.1 showed that there was by labour force status, and this is particularly evident in 1991. Indeed, in 1991, income relativities within each sex group for those in the 'still at school/no qualifications', 'secondary school qualifications only' and 'other tertiary qualifications' categories were almost identical, whereas in 1981 they had been quite different. Importantly, the underlying (raw) data also show a decline in the absolute incomes of European males in all qualification categories, and of European females in two categories ('secondary school' and 'other tertiary' qualifications), again supporting the argument of a link between structural change and increasing inequality, but in this

instance also strongly suggesting a decline in the rate of return (financial reward) for certain cultural capital (qualifications).

Exploring the latter issue, Figure 10.3.2 shows the effect of standardising the data for Maori to the age and labour force status distributions of European. In all but one case (that of females with a 'bachelors/post-graduate' qualification in 1981 and 1986, discussed separately below) the unstandardised indices show greater levels of inequality than their standardised equalivalents, reinforcing general understandings that the age and qualification distributions of Maori would be likely to play a role in producing the observed inequality in each year.

Figure 10.3.2
Income Relativity: Maori Mean Income as a Percentage of European Mean Income (in $1991), Comparison of Unstandardised Indices, and Indices Standardised for Age-, and Age-Labour Force Status Distributions, by Highest Qualification and Sex, Population Aged 15-64 Years, 1981-1991



Notes: Standardised (1): Maori standardised to age structure of European.
Standardised (2): Maori standardised to age and labour force distribution of European.

Source: Database B (See Appendix H.5)

For males in the 'secondary school qualifications' category, and for those of both sexes with an 'other tertiary' qualification, the combined effects of age structure and labour force status—of which the latter is generally the larger component and its effect increases over time—can also be seen to have revealed a small increase in unexplained inequality (the fully-standardised trend moving further away from the line denoting equality). Thus, although the increase in income inequality in these categories is a partial reflection of the relative deterioration in labour force status shown for Maori in Chapter 7, there is also the suggestion of a relative decline in the rate of return (financial reward) for Maori with these qualifications.

By contrast, the opposite is true for females with a 'secondary school' qualification, and for those of both sexes in the 'still at school/no qualifications' and 'bachelors/post-graduate' categories, the unexplained differences in these categories decreasing over time. The findings for the former and latter categories are particularly important because they run counter to the trends shown for their unstandardised equalivalents, and suggest that at the micro-level there has *not* been a decline in the relative rate of return for Maori with these particular qualifications, as the crude rates imply. Instead, the decline in unstandardised mean income relativity between Maori and European males in the 'secondary school' category is primarily an effect of the underlying deterioration in labour force status, whilst in the 'bachelors/post-graduate' category it is primarily an effect of ethnic differences in age structure. The finding for the 'still at school/no qualifications' category is rather more difficult to consider in terms of returns for qualifications, and may instead reflect the relatively larger proportions of such persons who are likely to be in the not in the labour force category, income inequality within which was shown above to have substantially reduced.

Because trends in the 'bachelors/post-graduate' category might be considered a key indicator of ethnic equality, it is worth examining that category in more detail. First, as implied, in this category the effects of age structure were larger than the effects of labour force status for males at all observations, and for females in 1991. They also increased over time. In 1981 the Maori age structure contributed 3 percentage points to the unstandardised differential for both males and females with these qualifications, whilst by 1991 this was 8 and nearly 4.5 percentage points respectively. By comparison, the component due to labour force status in 1991 reduced the unstandardised differential for males by 4 percentage points (zero in 1981), and for females by 1.5 percentage points (12.5 percentage points in 1981). Thus, although ethnic differences in labour

force status increased across the period for males and decreased for females, it was ethnic differences in age structure—which increasingly favoured European—that were the driving force behind the deterioration in unstandardised income relativity in this category.

Indeed, for females with a 'bachelors/post-graduate' qualification', standardisation for labour force status alone suggests that if the Maori and European labour force distributions had been the same, income inequality in 1981 and 1986 would have been substantially less equal than indicated by the crude indices (in 1981, by some 12 percentage points), and in 1991 would have remained fractionally (1.5 percentage points) less equal. The finding implies that Maori females with these qualifications have experienced a small income advantage from labour force status, but that this factor was partially (and by 1991, completely) offset by a less advantageous age structure.

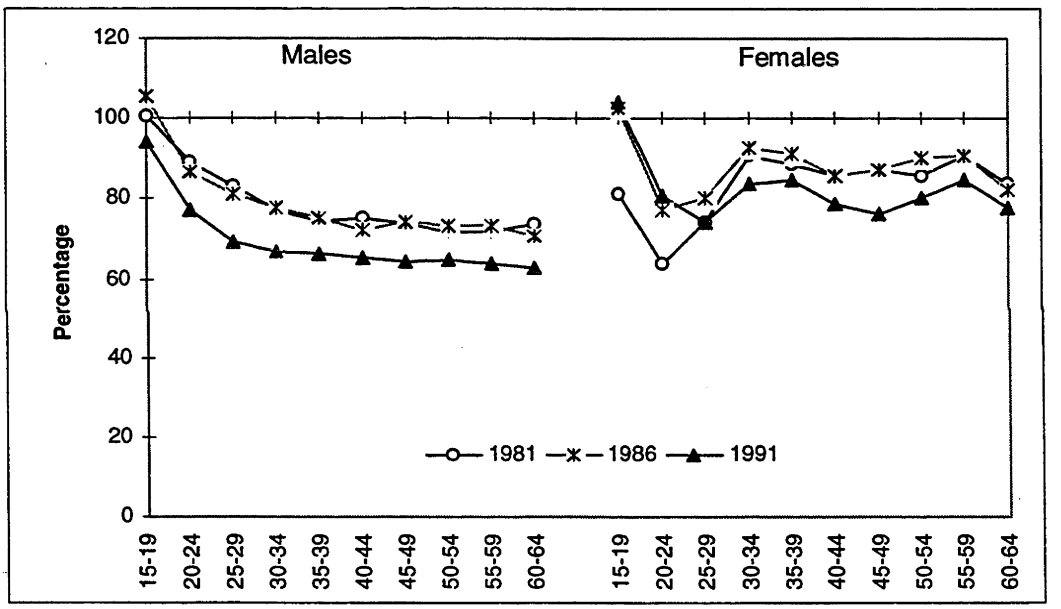
Only in the 'secondary school' and 'other tertiary' categories for males, therefore, and in the latter category to a somewhat lesser extent for females, has there been a true increase in unexplained inequality (that not explained by age structure and labour force status). By contrast, unexplained inequality reduced—in some cases quite substantially—for those of both sexes with a 'bachelors/post-graduate' qualification, for females with a 'secondary school' qualification, and for those of both sexes in the 'still at school/no qualifications' category. In all but the 'bachelors/post-graduate' category, ethnic differences in labour force status were the primary cause of the (explainable) trends, whilst in the latter category, age structure was the primary cause.

10.4 INCOME BY AGE, 1981-1991

Before considering the combined effects of the foregoing on total income inequality, Figure 10.4.1 provides a brief overview of total income relativity by age *per se*. This index is unstandardised. Very clear is that the relative situation of Maori compared with European has deteriorated over time for males at every age, and for all females above age 25. By contrast, for females below age 25, Maori-European income relativities not only improved substantially between 1981 and 1991, but Maori females aged 15-19 in both 1986 and 1991 had slightly higher mean earnings than their European counterparts. The latter is often attributed to the income-depressing effects of the higher levels of European participation in post-compulsory education at these ages, and an increase in this factor may well have been implicated in 1986 and 1991.

However, the relative improvement for Maori females under the age of 25 is also likely to be related to the above-noted improvement in the income relativities of the unemployed (until 1986) and those not in the labour force, who in 1991 comprised a relatively greater proportion of Maori than European females than previously. As noted above, this relative improvement may be a reflection of the social welfare benefit structure *vis-à-vis* ethnic differences in family formation and size, partnering, and sole parenting. It is less likely to reflect, for example, the small recent delay in the timing of Maori family formation noted in Chapter 3, which is investigated in more detail in the following chapter.

Figure 10.4.1
Income Relativity: Maori Mean Total Income as a Percentage of European Mean Total Income, by Sex and Age, Population Aged 15-64 Years, 1981-1991



Source: Database B (see Appendix H.6)

Despite the general deterioration in total income relativity for males of all ages, the underlying improvements in Maori-European relativities for the unemployed (until 1986) and not in the labour force populations are also likely to be implicated in the case of young males. Certainly it is clear that male income relativities are inversely related to age: the younger the age group, the more equal the mean total income. For females, on the other hand, the greatest inequalities occur at ages 20-29, and run approximately inverse to the well known 'M-shaped' curve of female labour force participation, which corresponds with the key family formation years. That is to say, the ratio of Maori to

European mean total income for females is lowest (most unequal) over the years normally associated with childbearing and childrearing, implying that the period of childbearing and childrearing is a significant cause of ethnic stratification for females. This finding suggests that the generally improved income relativities for unemployed and not in the labour force Maori females shown above and argued to be due—ostensibly—to aspects of the benefit structure *vis-à-vis* ethnic differences in family formation, are well and truly offset by the higher employment-related earnings of European females over these same years. It is an important point to remember because the trends examined above are for *each* labour force and qualification category and do not take into account the size of each category, and therefore the contribution made by each, to total income inequality.

10.5 THE EFFECT OF AGE STRUCTURE, LABOUR FORCE STATUS AND QUALIFICATIONS ON MEAN TOTAL INCOME

The effect of standardising Maori mean total income to the European distributions for the above range of factors is shown in Table 10.5.1. At all levels of disaggregation and at all observations, standardisation reduces the absolute difference between Maori and European mean total incomes and substantially improves income relativities. As might be expected, therefore, the greatest improvements occur once age structure, labour force status and educational qualifications have been simultaneously controlled, in 1981, 1986 and 1991 raising Maori-European mean total income relativities for males to 86, 87, and 85 per cent respectively, and those for females to 94, 95, and 94 per cent. That is to say, the fully-standardised data (last row of Table 10.5.1) indicate that the declared incomes of persons of the same age and characteristics were considerably more similar than the incomes of all persons undifferentiated by those characteristics, both supporting Brosnan's (1984) findings and, at least for females, extending them to 1991. That said, a 1991 income relativity for males of 85 per cent *after* standardisation for age structure, labour force status and qualifications is of considerable concern. This is especially so given the substantial improvements in income relativity demonstrated within the 'not in the labour force' and unemployed categories (which together comprise the very sizeable 'not employed' category, in 1991 accounting for approximately half of all Maori males of working age), and points to the serious inequities that underly these data. Although standardisation reveals a higher degree of

micro-level equality than is apparent from crude indices, the Maori population does *not* have the same labour force status, qualifications and age structure as the European population. As Chapters 7 and 9 demonstrated, in the first instance the underlying trends have deteriorated, and in the second, they have showed almost no change.

Indeed, reflecting the foregoing, the findings simultaneously reveal a small (1 percentage point) improvement in unexplained income inequality between 1981 and 1986, and a small deterioration between 1986 and 1991, of 2 percentage points for males and 1 percentage point for females. In each case, the resulting level of unexplained income inequality was slightly greater in 1991 than in 1981. Reiterating a point made throughout the thesis, it is not that the increase *per se* is large, but rather, that the trends run in the opposite direction to what might have been expected.

Table 10.5.1
Ethnic Differences in Mean Total Income and Effect of Standardising Maori Mean Total Income to European Age, Labour Force and Qualification Distributions, Singly and in Varying Combinations, Population Aged 15-64 Years, by Sex, 1981-1991

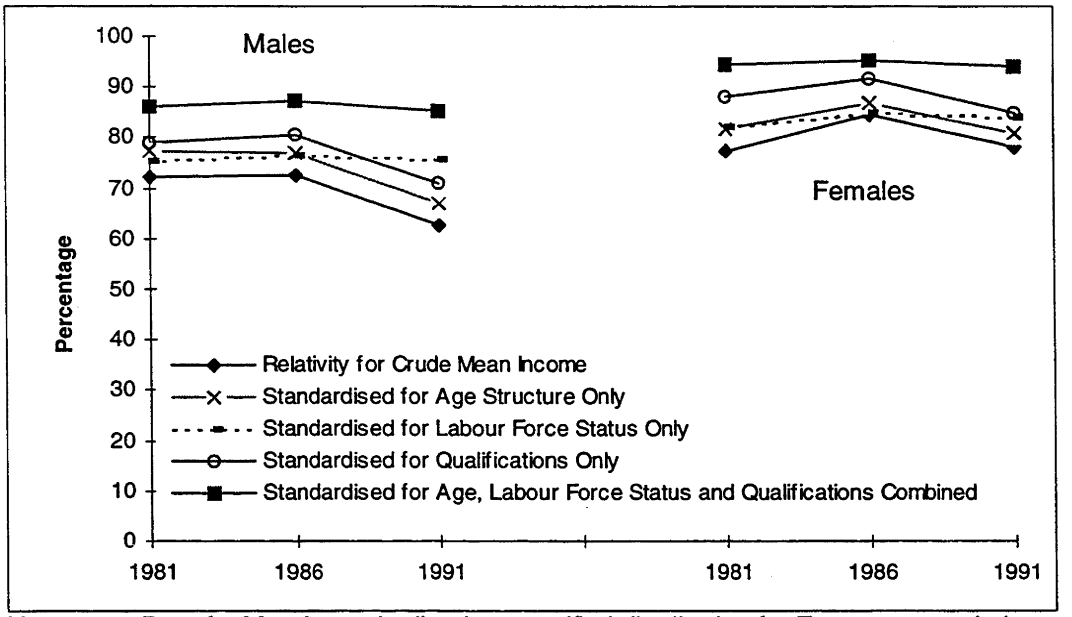
	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
CRUDE MEAN TOTAL INCOME DIFFERENTIAL*						
(European minus Maori)	$9,474	$7,872	$10,032	$3,100	$2,236	$3,318
MEAN TOTAL INCOME DIFFERENTIAL AFTER STANDARDISATION FOR:						
Age Structure Only	$7,700	$6,613	$8,881	$2,536	$1,902	$2,921
Labour Force Status Only	$8,305	$6,724	$6,531	$2,479	$2,170	$2,411
Qualifications Only	$7,077	$5,625	$7,775	$1,626	$1,185	$2,305
Age Structure and Labour Force Status	$6,827	$5,589	$5,854	$1,828	$1,776	$2,228
Age Structure and Qualifications	$5,251	$4,530	$6,343	$831	$800	$1,645
Labour Force Status and Qualifications	$6,304	$4,836	$4,893	$1,540	$1,113	$1,259
Age, Labour Force Status and Quals.	$4,646	$3,689	$3,949	$788	$703	$927
MAORI MEAN TOTAL INCOME AS A PERCENTAGE OF EUROPEAN MEAN TOTAL INCOME						
Crude Mean Total Income	72.06	72.80	62.59	77.50	84.42	78.19
Crude Mean Total Income standardised for:						
Age Structure Only	77.29	77.15	66.89	81.59	86.75	80.80
Labour Force Status Only	75.50	76.77	75.65	82.01	84.88	84.15
Qualifications Only	79.12	80.57	71.01	88.20	91.74	84.85
Age Structure and Labour Force Status	79.86	80.69	78.17	86.73	87.63	85.36
Age Structure and Qualifications	84.51	84.35	76.35	93.97	94.43	89.19
Labour Force Status and Qualifications	81.41	83.29	81.75	88.82	92.25	91.72
Age, Labour Force Status and Quals.	86.30	87.26	85.28	94.28	95.10	93.91

Notes: *Mean Total Income Differential = European Mean Total Income minus Maori Mean Total Income.
Source: Database B (see Appendix H.7)

Plotting trends for each variable individually, and for the three variables in combination, Figure 10.5.1 shows that standardisation for age structure alone raises Maori-European income relativities a few percentage points above their crude relativities, but at a steadily declining rate for both sexes, and more so for females than for males. Furthermore, standardisation for age structure alone does not greatly alter the direction of the unstandardised trends, which between 1986 and 1991 move away from unity. Standardisation for qualifications alone has a greater effect in terms of magnitude, but similarly does not alter the general direction of trends, for either sex. By contrast, for both sexes, standardisation for labour force status alone has a relatively small effect in both 1981 and 1986, but a considerably greater effect in 1991, and also maintains an almost unchanging trajectory across the period.[8] This latter pattern, which is more pronounced for males, is clearly that reflected in the trend for simultaneous standardisation by age structure, labour force status and qualifications. Thus, and whilst ethnic differences in qualifications remains the major contributor to the unstandardised total mean income differences between Maori and European females, and comprises a close second for males, the role of labour force status has become the driving force in producing the recent increase in total mean income inequality.

[8] The relatively small effect from labour force status *per se* for females in 1986 compared with 1981 and 1991 must be acknowledged as somewhat anomalous, but would appear to reflect the findings of Chapters 7 and 9 respectively, that the index of dissimilarity for labour force status for females is both considerably lower than that for educational qualifications, and underwent a much smaller increase between 1981-1986 than did the latter. The magnitude of the fall (28 per cent) between 1981 and 1986 in the crude income difference between Maori and European females shown in panel (a) of Table 10.1.1 will also be implicated.

Figure 10.5.1
Income Relativity (Maori Mean Total Income as a Percentage of European Mean Total Income): Comparison of Unstandardised Income Relativities, and Income Relativities After Standardisation for Ethnic Differences in Age Structure, Labour Force Status and Qualifications, Singly and in Combination, Population Aged 15-64 Years, by Sex, 1981-1991



Notes: Data for Maori standardised to specified distribution for European population.
Source: Table 10.5.1.

10.6 COHORT ANALYSIS OF MEAN INCOME

In this section, attention is shifted to cohort analysis, and to the age-income curve of cohorts born between 1927 and 1971. As with the cohort analysis of qualifications presented in Chapter 9, data are available for only three observations, and thus only a partial analysis of trends across the life cycle can be made. In all cases the observations record Maori mean income at each age as a proportion of European mean income at that age (age-specific income relativity), for each factor (i.e. labour force by qualification category) by sex, and the three observations for each cohort pertain to 1981, 1986 and 1991 respectively. However, because such a high level of data disaggregation results in a number of very small cell sizes, it is inappropriate to present a detailed analysis for every such category. Instead, the analysis reviews total trends (all labour force statuses and qualification categories combined) by sex; trends for the full-time labour force by each qualification category by sex; trends for the part-time labour force by each qualification category for females only; trends for the unemployed by sex,

but for two qualification categories only; and trends for the 'not in the labour force' population by sex, but without regard to qualifications.

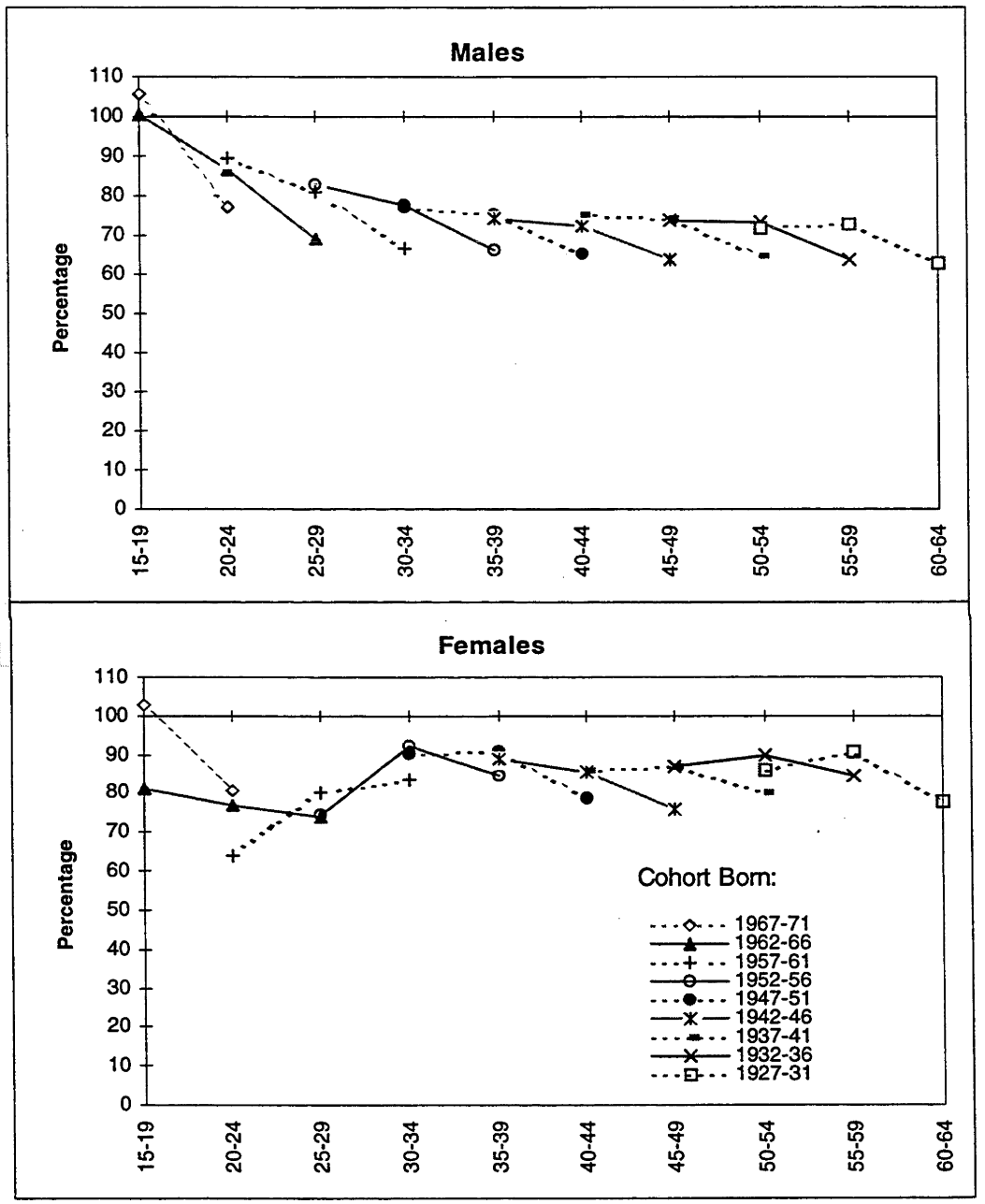
Cohort trends in Maori-European income relativities for mean total income (all labour force statuses and qualification categories combined) are plotted in Figure 10.6.1, and essentially reflect the age-sepcific patterns shown earlier in Figure 10.4.1. As with that earlier analysis, the most immediate impression is of substantial differences by sex. For most male cohorts, income relativities are generally lower (more unequal) than those for females, although the point that absolute incomes for females are substantially lower than for males should be recalled. Within each cohort's experience there is also a general decline in equality across the life cycle, this trend being most pronounced for the youngest cohorts, and across the age span of each cohort that corresponds with the 1986-1991 period.

With few exceptions, income relativities decline with each successively older age, both for each cohort (intra-cohort inequality), and also for each cohort *vis-á-vis* its predecessor when the latter was at the same age (inter-cohort—or intergenerational—inequality). For each successively earlier born cohort, on the other hand, there is a slower decline or a level trend across the first age-span shown, followed by an accelerating decline, but one that becomes less pronounced with increasing age. The overall result is that for all cohorts, both intra-cohort and inter-cohort inequality in 1991 was greater than in 1981 (see also Johnstone 1996; Martin 1997a).

The data for females present a rather different scenario, inequality increasing as cohorts reach their twenties, but then reducing, undoubtedly a reflection of family formation *vis-á-vis* formal employment. Within this generality, however, the same deterioration that was present for males over the age span that corresponds to the 1986-1991 period is present for all but the female cohort born 1957-1961 (aged 30-34 years in 1991). The trend is especially pronounced for the most recently born cohort, and also for the cohorts born 1942-1951, aged 40-49 years in 1991, implying a resumption of increasing inequality once the key family formation years are passed. A generally deteriorating situation is also evident in the increased inter-cohort inequality for cohorts as they reach or pass the same age as their predecessor, especially for the observation corresponding to 1991. These are important findings, in that whilst the highest levels of ethnic inequality *per se* for females appear to resonate with childbearing, and the lowest with employment, these patterns appear to be becoming even further entrenched. Indeed, it is important to re-emphasise that the above suggestions of small advantages to

Maori females as a result of the benefit structure are well and truly cancelled out over these ages by—ostensibly—the earnings of employed European females.

Figure 10.6.1
Cohort Income Relativity: Maori Mean Total Income as a Percentage of European Mean Total Income, by Sex, Cohort, and Age, 1981-1991



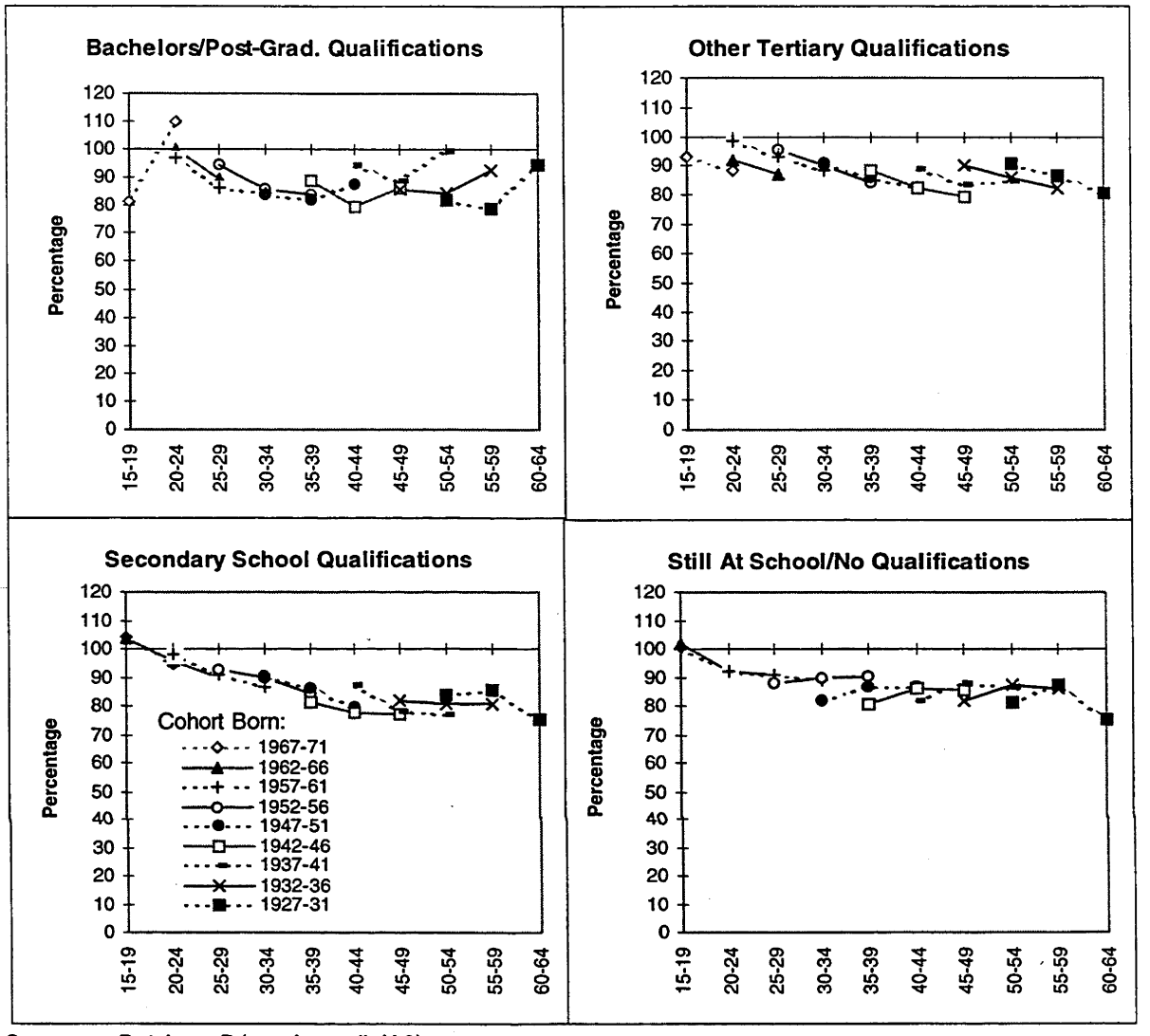
Source: Database B (see Appendix H.6)

10.6.1 Cohort Analysis of Income for the Population in Full-time Employment:

Cohort analysis of Maori-European income relativities for the male population in full-time employment, plotted in Figure 10.6.2, offers a considerable refinement to the picture given for all males. Primarily, it shows that the general increase in both intra- and inter-cohort inequality can be attributed to the 'other tertiary' and 'secondary school' qualification categories, which in 1991 accounted for 51 per cent of Maori males aged 15-64 years in full-time employment, and 63 per cent of European males (Appendix G.3). In each case these findings support the earlier macro-level analysis, which showed an increase in unexplained inequality for these categories (see Figure 10.4.2).

By contrast, there was a general improvement across the 1981-1986 period for cohorts in the 'still at school/no qualifications' category, followed by a levelling off or stabilising across the 1986-1991 period for almost all cohorts (the main exception being the oldest cohort, born 1927-1931). A similar improvement occurred across the 1986-1991 period for most cohorts in the 'bachelors/post-graduate' category, albeit after an initial deterioration for several cohorts. Again the findings support the earlier macro-level analysis, which for these two categories showed a sizeable decline in unexplained inequality.

Figure 10.6.2
Cohort Income Relativity: Maori Mean Income as a Percentage of European Mean Income for the Population in Full-Time Employment, by Highest Qualification, Cohort and Age, Males, 1981-1991

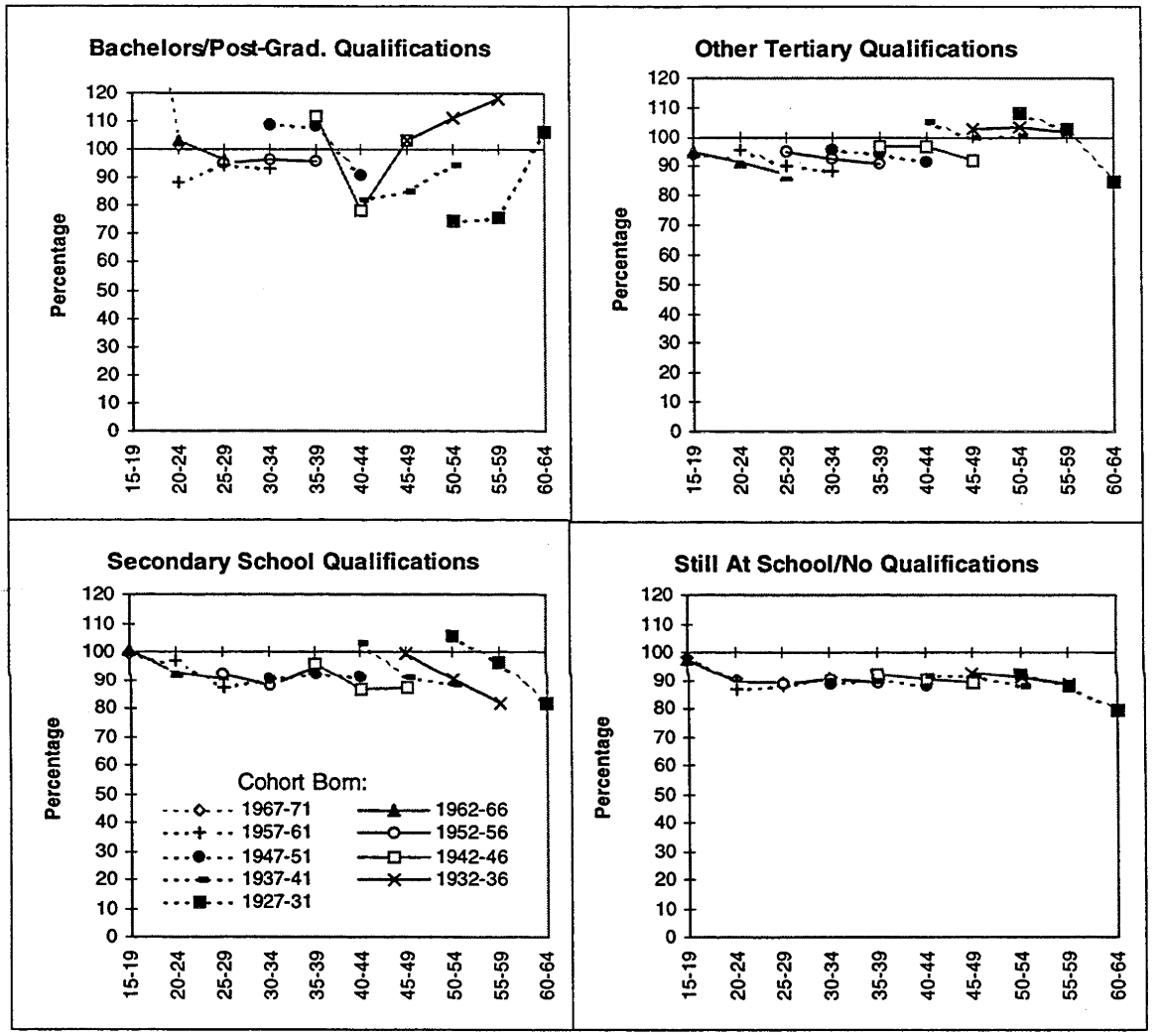


Source: Database B (see Appendix H.8)

Trends for females who were employed full-time are very different (Figure 10.6.3). In three of the four categories there is clear evidence of higher Maori than European incomes (relativities above 100 per cent), affecting several cohorts in the 'bachelors/post-graduate' category, the three earliest born cohorts in the 'other tertiary' category, and the earliest born cohort in the 'secondary school qualifications' category—although in the latter cases the Maori advantage was either lost or greatly diminished after 1986. Indeed, for the earliest born cohorts in the two latter categories, the post-1986 deterioration in equality across the life cycle—which affected all but a few

isolated cohorts, irrespective of qualification category—is also greater than that for cohorts that never experienced a Maori advantage.

Figure 10.6.3
Cohort Income Relativity: Maori Mean Income as a Percentage of European Mean Income for the Population in Full-Time Employment, by Highest Qualification, Cohort and Age, Females, 1981-1991



Notes: Missing values = no persons declaring income in either or both populations;
Values off chart = small cell outliers.
Source: Database B (see Appendix H.8)

Also noteworthy for females is the higher variation of income relativities in the 'bachelors/post-graduate' category than for either males or females in any other qualification category, albeit the data cluster around the line denoting equality. This variation undoubtedly reflects the presence of smaller cell sizes than in the other categories, but can still be considered to have a reasonable degree of validity. For example, the income relativity *not shown* for the cohort born 1967-1971 when aged 15-

19 years indicated a Maori mean income almost double that of European, and pertained to 15 (0.6 per cent) and 99 (0.9 per cent) of Maori and European 15-19 year-old females respectively (see Appendix G.3).

Overall, however, Maori-European income relativities in the 'bachelors/post-graduate' category generally tended to improve and/or to return to unity across the life cycle, whilst those for cohorts in the three remaining categories tended to deteriorate, especially in the 'other tertiary' category, which was shown earlier (Figure 10.4.2) to have experienced a small macro-level increase in unexplained inequality (i.e. a shift from a Maori to a European advantage). Almost regardless of age, those in the 'other tertiary' category had experienced the lowest levels of income inequality in 1981, but thereafter inequality increased for each successively younger cohort at each successive age, so that by 1991 there was very little difference between more recently born and middle-aged cohorts in the 'other tertiary', 'secondary school' and 'still at school/no qualifications' categories.

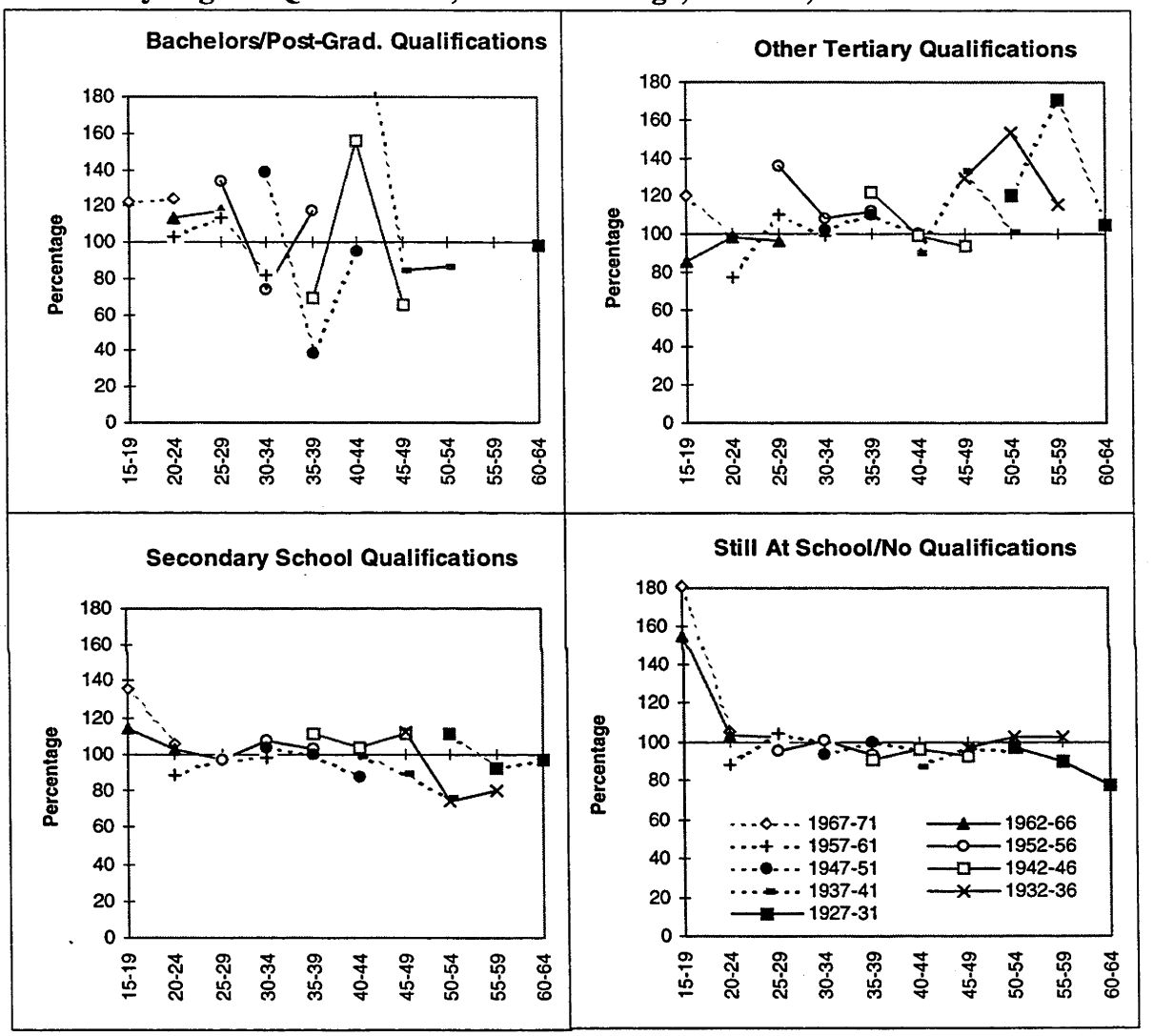
10.6.2 Cohort Analysis of Income for the Population in Part-time Employment:

As noted above, because of small cell sizes, cohort trends for males who worked part-time are not shown here. However, those for the 'secondary school' and 'still at school/no qualifications' categories bear a striking resemblance to those for females, and thus the following analysis for females, pertaining to Figure 10.6.4, can be read for both sexes.

The most immediate impression gained from Figure 10.6.4 is the considerably greater variation of income relativities for cohorts in the 'bachelors/post-graduate' and 'other tertiary' categories, especially for the earlier born cohorts, by comparison with the near homogeneity for all but the most recently born and earliest born cohorts in the 'secondary school' and 'still at school/no qualifications' categories; the general clustering of cohort trends about the line denoting unity (=100); and the inference of higher Maori than European incomes for a large proportion of cohorts in all qualification categories. In the 'bachelors/post-graduate' and 'other tertiary' categories especially, the latter suggest a considerably greater degree of income inequality—generally favouring Maori females—than was evident for those who worked full-time. That said, the patterns are likely to reflect the earlier-noted contention (Raney 1990, Harris 1992) that Maori females with higher qualifications tend to work more hours than European. In the 'bachelors/post-graduate' category they are also likely to reflect the fact that few Maori

females with such qualifications also work part-time, cell sizes in that category (in 1991, n=69) being too small to place any great significance on the patterns.

Figure 10.6.4
Cohort Income Relativity: Maori Mean Income as a Percentage of European Mean Income for the Population in Part-Time Employment, by Highest Qualification, Cohort and Age, Females, 1981-1991



Notes: Missing values = no persons declaring income in either one or both populations.
Values off the chart = small cell outliers.
Source: Database B (see Appendix H.8)

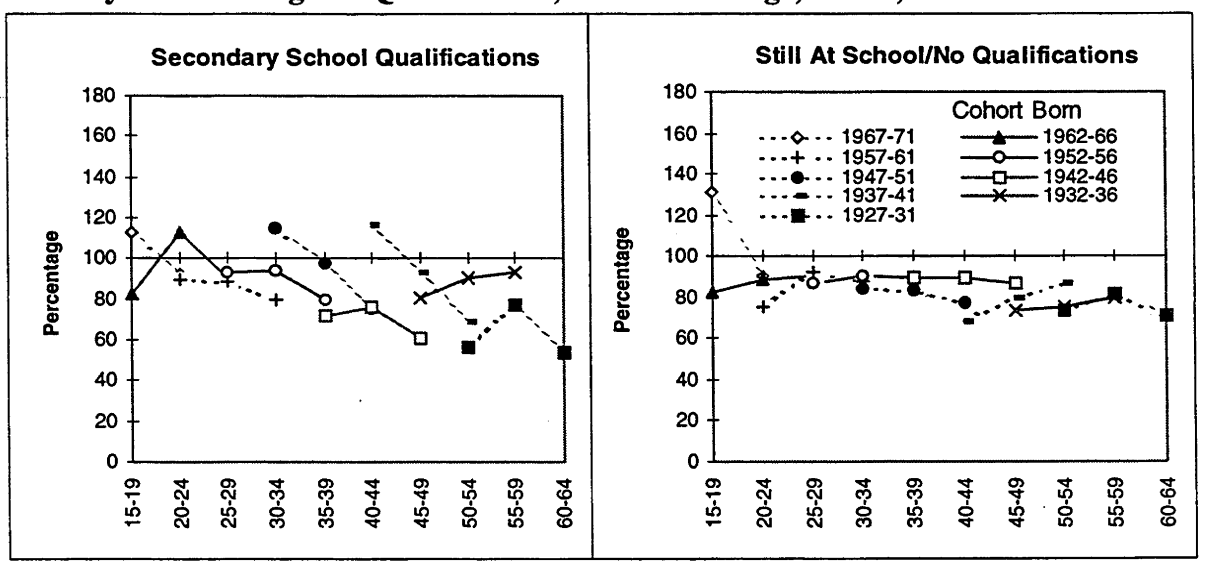
By contrast, in 1981 over 900 Maori females were to be found in the 'other tertiary' category, and in 1991, over 3,000. There can thus be little question that the patterns and trends shown for the more recently born and middle-aged cohorts in that category are meaningful. Whilst generally remaining above unity, they show that the earlier proposal of a small increase in unexplained inequality (from a small advantage for

Maori, to a slightly larger advantage for European) between 1986 and 1991 for females with this qualification was almost universally experienced. A similar trend is reflected in the age span corresponding to the 1986-1991 period, for several cohorts in the 'secondary school' and 'still at school/no qualifications' categories. The trend was especially pronounced for the two most recently born cohorts (born 1962-1966 and 1967-1971) which had begun their part-time employment experience with much higher income for Maori.

10.6.3 Cohort Analysis of Income for the Unemployed Population:

Figure 10.6.5 shows cohort trends for unemployed males, omitting, as explained above, data for those with either a 'bachelors/post-graduate' or 'other tertiary' qualification. In both 1981 and 1986, those categories together accounted for less than 1 per cent of each sex-ethnic group who were unemployed, and in 1991, for less than 3 per cent of European males and 4 per cent of Maori males (see Appendix G.3).

Figure 10.6.5
Cohort Income Relativity: Maori Mean Income as a Percentage of European Mean Income for the Unemployed Population, by Selected Highest Qualification, Cohort and Age, Males, 1981-1991



Notes: Missing values = no persons declaring income in either one or both populations.
Source: Database B (see Appendix H.8)

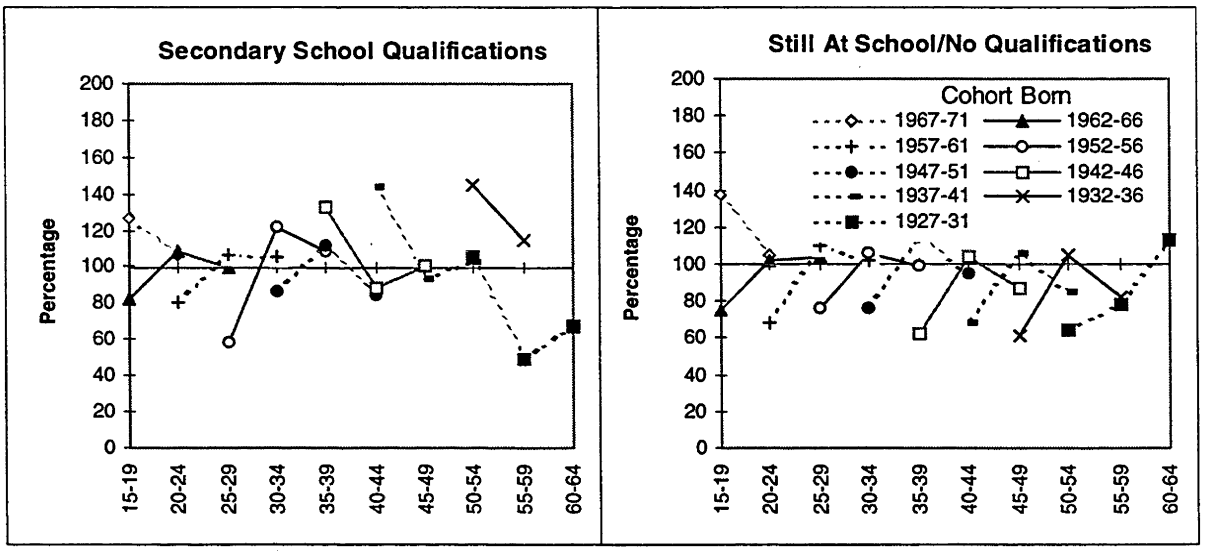
The most immediate impression gained from data for the two remaining categories is of greater variation in the income relativities of cohorts with secondary

school qualifications than with no qualifications, especially amongst middle-aged and earlier born cohorts. As implied earlier, this variation may be a reflection of differing rates of transition between unemployment and work for cohorts with 'some' qualifications as opposed to 'no' qualifications. Somewhat paradoxically, the argument is supported by the fact that the 'secondary school' data also reveal a more substantial decline in Maori-European income relativity across the life cycle for many of the cohorts in this category than is apparent for those in the 'still at school/no qualifications' category. The trend is especially evident for cohorts born 1937-1941 and 1947-1951, and aged 40-44 and 50-54 years in 1991, although it is not evident for the cohort born 1932-1936 and aged 50-59 in 1991. Nevertheless, both the improvement in Maori-European crude income relativity for unemployed males across the 1981-1986 period, and the subsequent deterioration between 1986 and 1991 (as shown earlier in Figures 10.2.1 and 10.2.2), can be understood as emanating largely from the secondary school qualifications category. That is to say, Maori males who were both unemployed and had secondary school qualifications experienced greater deterioration in income relativity *vis-à-vis* their European counterparts than did those with no qualifications. The substantial differences in the trends for the two categories suggest that ethnic differences in labour market churning may have more explanatory power for males than ethnic differences in family formation *vis-à-vis* the benefit structure.

In similarity with males, the income relativities of female cohorts with a 'secondary school' qualification also show the most within-group variation, again suggesting the likelihood of higher rates of transition between unemployment and work (or briefer spells of unemployment) than for those in the 'still at school/no qualifications' category. There is also—in both categories—evidence of a general reversal in trends across the life cycle for most female cohorts. However, in only a few cases do these shifts result in greater income inequality. Indeed, with few exceptions, trends corresponding to the 1981-1986 period show a shift from a European to a Maori advantage or vice versa, whilst those for 1986-1991 show a general return towards or just beyond unity. The substantial overall improvement and then small decline to near-unity in income relativity for unemployed females shown earlier in Figures 10.2.1 and 10.2.2 would therefore appear to have been more universally experienced by females. Such trends particularly support the earlier argument that the relative improvements in income for unemployed Maori females between 1981 and 1986, and the subsequent deterioration between 1986 and 1991, reflect ethnic differences in family formation *vis-*

à-vis the benefit structure, more than they do ethnic differences in labour market churning—although an effect from the latter is also clearly indicated.

Figure 10.6.6
Cohort Income Relativity: Maori Mean Income as a Percentage of European Mean Income for the Unemployed Population, by Selected Highest Qualification, Cohort and Age, Females, 1981-1991



Notes: Missing values = no persons declaring income in either one or both populations.
Source: Database B (see Appendix H.8)

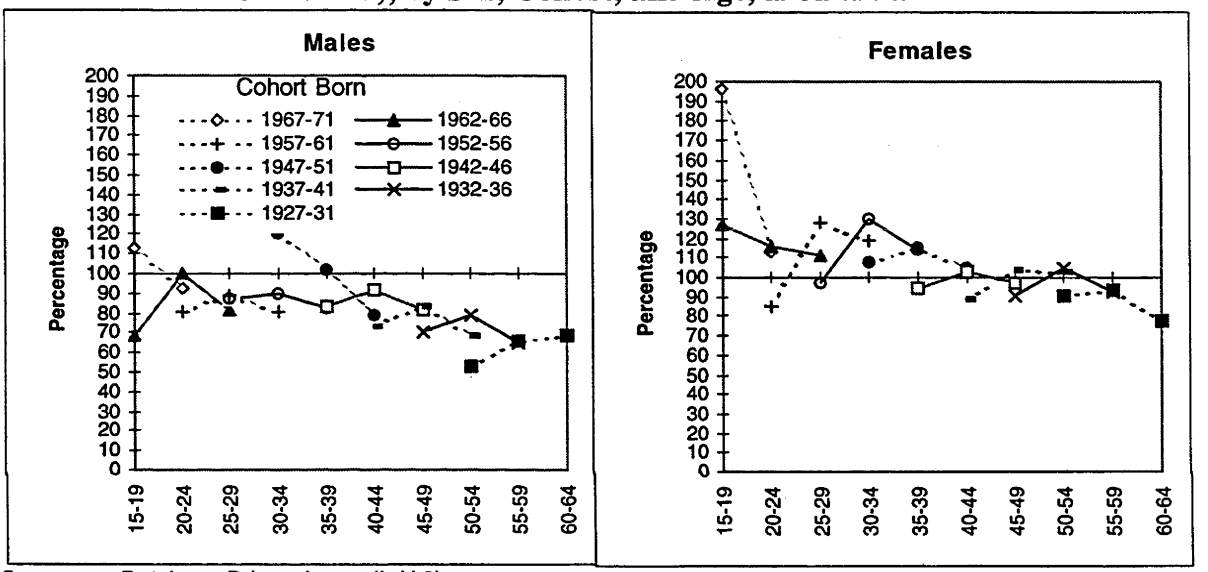
10.6.4 Cohort Analysis of Income for the Population Not in the Labour Force:

Finally, trends in income relativity for those not in the labour force are presented in Figure 10.6.7. Data for the more recently born female cohorts show substantial evidence of higher Maori than European incomes, whilst the opposite is the case for the earliest born male cohorts, the latter showing higher European than Maori incomes. These patterns further support earlier arguments that the relative advantage in mean income for younger Maori females who are not in employment is likely to be at least a partial function of higher levels of sole parenting and income assistance for children, whilst that for older European males is likely to be at least a partial function of earlier and more substantial access to private superannuation schemes than for Maori males.

With few exceptions, Maori-European income relativity in this category shows first a small improvement, and then a deterioration, for almost all cohorts and for both sexes. In the case of males, the pattern generally results in income relativity in 1991 being slightly below that of 1981, although the trend is considerably more marked for

the cohort born 1947-1951 (aged 40-44 years in 1991), which experienced a decisive shift from a Maori to a European advantage. Perhaps significantly—and whilst the trend *looks* anomalous—this is the same cohort shown to have experienced a sizeable increase in income inequality in the 'secondary school-unemployed' income category (Figure 10.6.5). Given that this cohort will contain a large proportion of the parents of current teenagers, the trend is of concern and implies a need for future research.

Figure 10.6.7
Cohort Income Relativity: Maori Mean Income as a Percentage of European Mean Income for the Population Not in the Labour Force (All Qualifications Combined), by Sex, Cohort, and Age, 1981-1991



Source: Database B (see Appendix H.8)

For females, on the other hand, and with the exception of the two most recently born cohorts, the trends between 1981-1986 show a general shift from a European to a Maori advantage, and, although these trends then reversed or levelled off, the advantage to Maori remained for all but the two earliest born cohorts. Income relativities for the two most recently born female cohorts, which indicated a considerable Maori advantage in 1981, experienced a substantial decline across the period, but also remained above unity in 1991. Trends for this labour force category imply both changes to the payment structure of benefits, which for both sexes appear to have initially improved the incomes of Maori *vis-à-vis* European, and the presence of churning between the labour force and the non-labour force that was greater for European than Maori. As implied earlier, this is not to say that the latter could not also have been a partial cause of the relative

improvements in income for not in the labour force Maori across the 1981-1986 period, but that it is less likely.

10.7 SUMMARY

Despite a long-term movement towards equality in the mean total incomes of Maori and European, a small decline has recently taken place. Importantly, the deterioration began earlier (around 1981) for the population employed full-time than for the part-time and unemployed populations, for whom both crude and standardised (by age and qualifications) mean income relativities (Maori mean income as a percentage of European mean income) first improved between 1981 and 1986—in the case of unemployment, substantially—and then deteriorated. That said, in 1991, both crude and standardised mean income relativities for the part-time and unemployed populations remained either very close to, or well above, their 1981 levels, whilst those for the population in full-time employment had fallen below. By contrast, both crude and standardised mean income relativities for those not in the labour force underwent a substantial improvement across the entire 1981-1986 period, although the improvement decelerated and may even have declined between 1986 and 1991.

In almost all cases, standardisation revealed that if the Maori and European age and qualification structures had been the same, Maori would not have been protected from the general increase in income inequality between 1986 and 1991. That is to say, in some labour force categories (full-time employment for both sexes; part-time employment, unemployment and not in the labour force for males) there was an increase in unexplained income inequality, whilst in others (unemployment and not in the labour force for those of both sexes; part-time employment for males), having the same age and/or qualification structures as European would have proved detrimental to Maori mean incomes.

The findings are important in a number of ways. In the first instance they reveal that the increase in unexplained income inequality between 1986 and 1991 for unemployed and part-time employed males was slightly greater than indicated by the observed differentials. In the case of unemployed males, either a more advantageous qualification structure or a higher income by qualifications margin for Maori, resulted in a partial concealment (of 3 percentage points) of the true increase in unexplained income inequality, whilst for part-time employed males, the Maori age and qualification

distribution contributed almost equally to the concealment (in 1991, 3 percentage points each). However, the opposite was the case for those of both sexes who worked full-time, the contribution to the observed mean income differential made by qualifications increasing, and that by age structure, decreasing, especially for females. It is possible that the small increase in unexplained income inequality that these patterns and trends revealed reflected a relative decline in hours worked by Maori, although this factor could not be examined in this thesis. It would be unlikely to reflect underlying differences in occupational distribution, as this factor was shown in Chapter 8 to have declined over the same period.

In the second instance, the findings suggest that in providing benefit incomes, the policies of the state *vis-à-vis* the demographic structure of each population can seriously influence trends in ethnic inequality. Between 1981 and 1986, the relative improvements in the observed mean incomes of Maori *vis-à-vis* European who were not in the labour force (both sexes) appear to have reflected aspects of the benefit structure *vis-à-vis* the demographic structure (age structure, and implicitly, family size and composition) of Maori. Between 1986 and 1991, incremental reductions in benefits, and restrictions in eligibility for them, in combination with a decline in the age-effect, may have been associated with a deterioration in the previous trends, although it is important to note that for females in this category, income inequality in 1991 remained close to unity. So too may other factors not examined here, for which age may be a proxy, have been involved. There may, for example, have been a relative deterioration in the income-enhancing effects of labour market churning for Maori between 1986 and 1991 (which could not be examined here), as unemployment rose to its peak. Similar comments were directed at the increase in unexplained income inequality for unemployed males, although the slightly higher 'income by qualifications' margin experienced by Maori males would appear to suggest otherwise.

Examination of income relativity trends within each qualification category revealed a similarly complex situation. However, in these categories, and whilst crude income differentials for almost all categories had shown a deterioration between 1981 and 1991 or 1986 and 1991, age- and labour force-standardised indices showed either the reverse, or a lesser deterioration. Indeed, only in the 'secondary school' and 'other tertiary' categories for males, and in the latter category to a lesser extent for females, was there an increase in unexplained inequality (one that not explained by age structure and labour force status). Instead, unexplained inequality reduced—in some cases quite

substantially—for both sexes with a 'bachelors/post-graduate' qualification, for females with a 'secondary school' qualification, and for those of both sexes in the 'still at school/no qualifications' category. In all but the 'bachelors/post-graduate' category, ethnic differences in labour force status were the primary cause of trends in the crude differentials, whilst in the latter category, age structure was the primary cause. The findings are important because they demonstrate that although there has indeed been a relative decline in the rate of return for some aspects of cultural capital (qualifications) for Maori, there has been a relative improvement for some others.

When these findings were considered in terms of their impact on total mean income relativities, they revealed substantially greater equality for those with similar characteristics than had been apparent from the observed differentials. If the Maori population in 1981, 1986 and 1991 had had the same age, labour force and qualification distribution as European, the mean total income of Maori females would have been 94, 95 and 94 per cent respectively of that of European females. For males the corresponding indices would have been 86, 87 and 85 per cent. These standardised indices would also have undergone substantially less decline across the 1986-1991 period than was indicated by the observed differentials, which for males declined from 73 to 63 per cent, and for females, from 84 to 78 per cent.

Of the three components controlled, age structure was shown to have had the smallest—and a steadily declining—effect for both sexes. That said, in 1991, age structure still accounted for 11-12 per cent of the observed differential for both sexes. For males in both 1981 and 1986, ethnic differences in qualifications accounted for the largest proportion of the observed differential, whilst by 1991 the dominant factor had changed to ethnic differences in labour force status, which in 1981 had been of lesser importance than even age structure. For females, the greatest effect at all observations came from ethnic differences in qualifications. However, between 1986 and 1991, the component of the observed income differential due to labour force status increased substantially, whilst that due to qualifications decreased. Thus, for both sexes, the recent increase in the crude income differential was driven by the increase in ethnic differentials in labour force status. The findings support those of Easton (1996b:120), who proposed that the recent changes were more likely to be employment, rather than age, effects.

These findings and their proposed explanations were further supported by cohort analysis, with four important additions. First, whatever factors have driven the recent deterioration in Maori-European income relativities for those in the employed labour

force, they have had an almost universal effect on all cohorts with either a 'secondary school' or 'other tertiary' qualification, irrespective of sex. Second, in the sizeable 'other tertiary' category, where deterioration in income relativity was especially evident, the effect of these unidentified factors increased more or less inversely by year of birth, each more recently born cohort tending to have lower income relativity—greater inequality—than its predecessor when at the same age. The finding is important because, whilst the more recently born cohorts in 1991 did not always have the lowest income relativities (greatest levels of inequality) *per se*, the increase in inter-cohort (intergenerational) inequality suggests that if the recent trends continue, the more recently born cohorts may shortly become far more unequal than their older predecessors. The findings support Pool and Sceats (1990:48), who, amongst others, have argued that in the absence of action to reskill and employ these cohorts, they may remain disadvantaged with respect to both their European peers and surrounding Maori cohorts, throughout their lives.

Third, trends in almost all categories showed substantial evidence of periodicity, a finding that reinforces earlier arguments regarding the involvement of period factors, such as changes in employment, wages, and income support policy, and in demand for certain types of skills and labour force attachment. Such periodicity does not support, for example, the Government's belief that a culture of dependency is the cause of demand for income support.

Fourth, cohort analysis of trends in total mean income relativity for all females suggested that the years of peak childbearing and childrearing (20-29 years) are associated with the highest levels of ethnic inequality for females. Whilst this pattern could not be detected in any of the subsequent 'labour force by qualification' categories examined by cohort, it is important to remember that age-specific/cohort analyses control only for age, not age structure (i.e. the proportion of each ethnic group at each age). Nor do they reflect the size of each labour force and/or qualification category. Thus, it is probable that the phenomenon does exist at the aggregate level, its apparent 'invisibility' at the level of each individual category being a function of size-effects.

Thus it can be concluded that the trends at the macro-level were not due to causes endogenous to any specific ethnic group or cohort, but involved a fairly universal interaction of population with period factors—policies or events—that saw a relative deterioration for Maori in many income categories between 1986 and 1991. The argument that period factors have primacy in producing the trends in relative income is

reinforced by the fact that they have been accompanied by absolute declines in the mean incomes of both Maori and European. The extent to which these factors continue to influence income trends in the near future will therefore have significant implications for ethnic stratification.

11

BIRTH AND FORTUNE IN NEW ZEALAND: THE EASTERLIN HYPOTHESIS IN AN ETHNIC CONTEXT

11.0 INTRODUCTION

In the late-1960s, American economist Richard Easterlin advanced the argument that cohort size was a cause of inequality. Large cohorts, he argued, experience greater competition for employment than small cohorts, and as a result earn lower incomes than small cohorts. Faced with these differing fortunes, large cohorts also delay their family formation and have correspondingly smaller family sizes than their small cohort predecessors. Together these dynamics create peak and trough waves of population, wherein a relatively small cohort is followed a generation later (according to Easterlin, around 20 years later) by a relatively large cohort, and so on, creating a self-generating cycle of relative equality/inequality.

Despite the rather deterministic nature of the arguments and a number of conceptual and methodological limitations outlined in Chapters 3 and 4, the model has been widely applied in the American context and substantiated to varying degrees (Easterlin 1987a, 1987b; Schultz 1981; Smith and Welch 1981; Schapiro 1988). It does not, however, appear to have been applied either in New Zealand (cf. Thomson 1992, who looked at policy-capture by different generations), or at the level of the ethnic group, the possibilities of which Easterlin (1987a:161) noted only in passing.

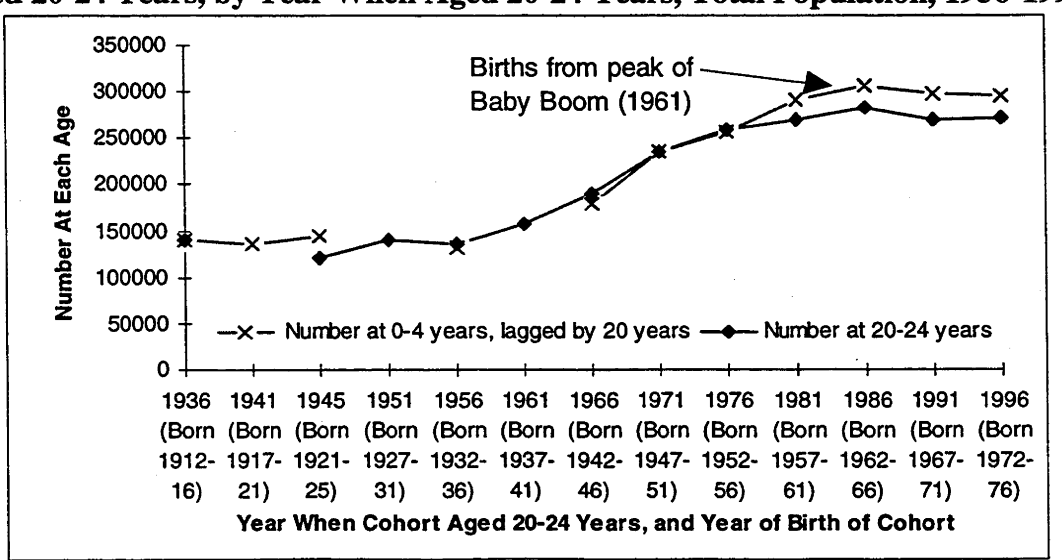
This chapter undertakes a limited study of the arguments in the New Zealand setting, illustrating them first with data for the total population, and then applying them to data for the Maori and non-Maori/European populations. The overall approach—detailed in Chapter 4—divides the original hypothesis into two components, the first concerning cohort size, employment, and income experience (demographic reproduction as an independent variable of inequality), the second concerning the timing of family formation, as indicated by the age at which each cohort has experienced its peak age-specific fertility rate (ASFR) (demographic reproduction as a dependent variable of inequality). Both components are then examined under 'classic' and 'expanded' versions of the hypothesis. The chapter is both exploratory in nature, and unable to be fully

comprehensive, being severely limited by a lack of age-disaggregated income and employment data for Maori between 1956 and 1971.

11.1 THE EASTERLIN HYPOTHESIS: THE CASE OF NEW ZEALAND

As explained in Chapter 4, this analysis takes as its starting point the size of birth cohorts around the time of labour market entry (20-24 years), rather than at the time of birth, thereby permitting the effects of migration (both immigration and emigration) and death to be accounted for. The difference is readily apparent from Figure 11.1.1, which shows the number of children aged 0-4 years at each five-year observation, lagged by 20 years, and the number of persons from the same birth cohorts present in New Zealand 20 years later—albeit not necessarily the self-same individuals. Very clear is a substantial decline in numbers by age 20-24, for those born during the peak baby boom years (late 1950s-early 1960s), implying a net loss from migration. In the context of Easterlin's arguments, the finding may be of some significance, implying the consequences of severe labour market competition, although the desire and potential capacity to undertake overseas travel at these ages and during this historical period should not be ignored. Either way, the issue (of migration) cannot be pursued further in this analysis, other than emphasising at this point its potentially ameliorating effect on competition for employment, and the fact that it reflected a sustained trend between 1981 and 1996. A similar, though short-lived pattern also appears for those aged 20-24 in 1945, undoubtedly explained by overseas service during World War Two.

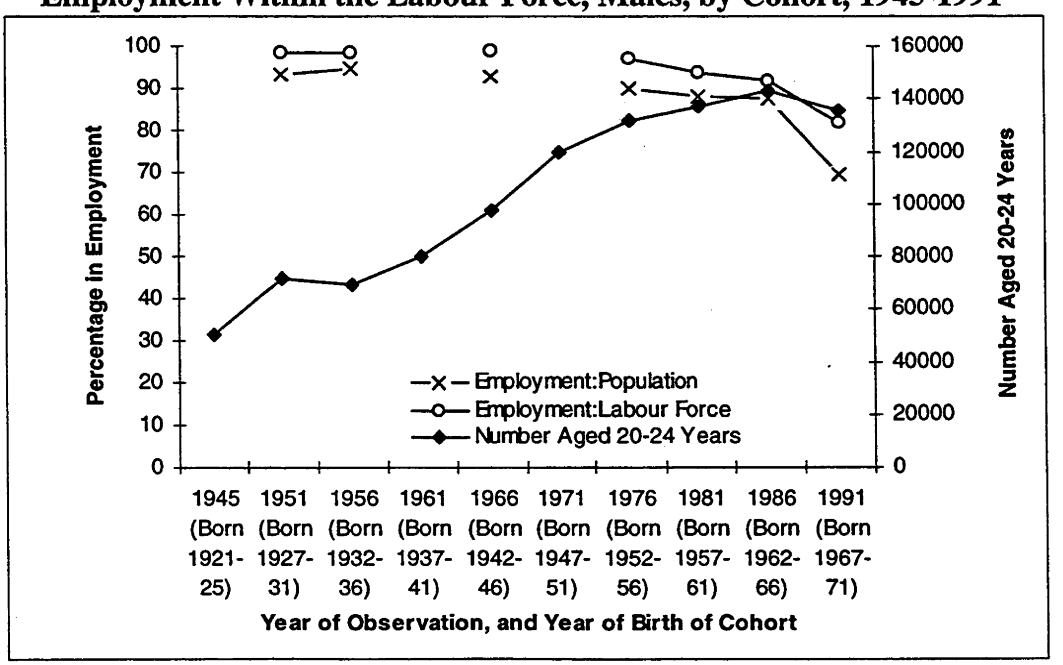
Figure 11.1.1
Number of Children Aged 0-4 Years Lagged by 20 Years, and Number of Persons Aged 20-24 Years, by Year When Aged 20-24 Years, Total Population, 1936-1996



Source: *Census of Population and Dwellings* (see Appendix D.3)

When cohort size is compared with the proportion of 20-24 year old males in employment, as in Figure 11.1.2, there is indeed strong evidence of an inverse correlation between the two, supporting Easterlin's major contention. Between 1951 and 1956, when cohort size was both relatively low and declined slightly, there were both very high, and increasing, proportions in employment. Trends for the period 1956-1971 are more difficult to ascertain, but it is clear that as the first of the large baby boom cohorts reached 20-24 years of age in the 1970s, employment rates began to fall, and continued to do so for the remainder of the period. The probable role of participation in post-compulsory education in the decline in the employment to population ratio is discussed below. In the interim, it must also be noted that when the greatest decline in employment rates took place, between 1986 and 1991, there was a concomitant decline in cohort size. Thus, whilst there is considerable support for the Easterlin hypothesis on this narrow formulation of the argument, it is more questionable after 1986—unless, of course, the accelerated decline in employment rates between 1986 and 1991 is a lagged effect of the peaking of cohort size in 1986, which may have seen the reaching of a saturation point. This is a distinct possibility and a factor which cannot be ruled out until data for subsequent years become available.

Figure 11.1.2
Cohort Size at Age 20-24, Percentage of 20-24 Year Olds in Employment (Employment to Population Ratio), and Percentage of 20-24 Year Olds in Employment Within the Labour Force, Males, by Cohort, 1945-1991



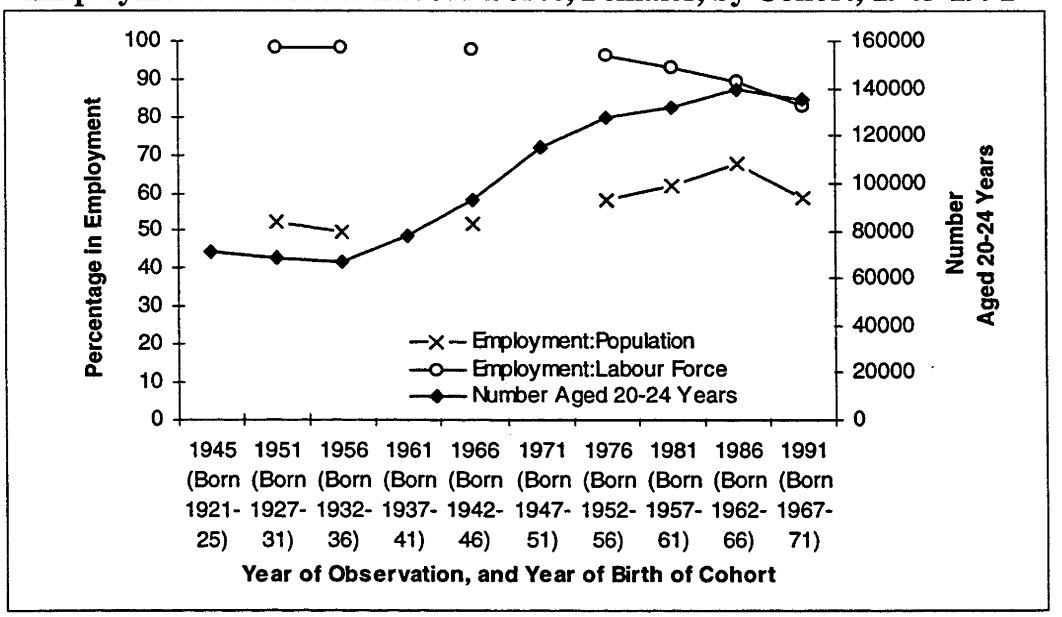
Source: Census of Population and Dwellings (see Appendix I.1)

As implied, the declines in the employment to population ratio shown in Figure 11.1.2 undoubtedly reflect an increase in the proportions undertaking post-compulsory education, a factor which Easterlin (1987a:152) acknowledges as potentially deriving a longer term advantage, but which for large cohorts he does not see as a direct function of cohort size. That is to say, by contrast, he proposes that large cohorts will be less likely to go to university, in part because competition with siblings for parental resources will reduce the possibility, and in part because large cohorts experience lower returns for education and therefore the incentive to get a qualification is reduced. Whilst it is difficult to compare the situation of students in America and New Zealand in terms of these factors, not least because the private cost of attending a tertiary institution has only recently (1989) become an issue in New Zealand, it was clearly shown in the previous chapter that there has indeed been a recent decline in the rate of return for qualifications, and this change corresponds with the arrival in the labour force of the post-peak baby boom cohorts. Thus the arguments are certainly areas that would benefit from further research by true cohort (e.g. Davies 1993). At the same time, however, they highlight some important contradictions in Easterlin's hypothesis, which was based on employment trends within the labour force only.

The latter is an issue of particular pertinence to the situation of females, labour force trends for whom are rather more difficult to examine against the hypothesis. For those *in* the labour force, the patterns are very similar to those for males (Figure 11.1.3), with the proportion in employment declining from the late 1960s - early 1970s, as cohort size increases with the first of the baby boomers reaching age 20-24. As was also the case for males, the decline in within-labour force employment (or the increase in unemployment) was greatest during the 1986-1991 period, when cohort size fell slightly. However, when the relationship between cohort size and the proportion of all 20-24 years old females in employment (the employment to population ratio) is examined, the two trends can be seen to move in unison: as cohort size increases or decreases, so too does the proportion in employment. Reflecting a phenomenon experienced for females throughout all developed countries, and typically explained by social rather than demographic change, these trends run exactly counter to those proposed by Easterlin. Again, therefore, there is some, but not unqualified, support for this component of the Easterlin hypothesis. Indeed, the slight decline in the employment to population ratio between 1951 and 1956 suggests not the effects of cohort size but withdrawal from the labour force as the baby boom got under way. Certainly the issue of shifts in the timing

of family formation and changing levels of secondary school education will also be pertinent to the argument, and imply the need for standardisation and/or component analysis in order to validly examine the trends.

Figure 11.1.3
Cohort Size at Age 20-24, Percentage of 20-24 Year Olds in Employment (Employment to Population Ratio), and Percentage of 20-24 Year Olds in Employment Within the Labour Force, Females, by Cohort, 1945-1991

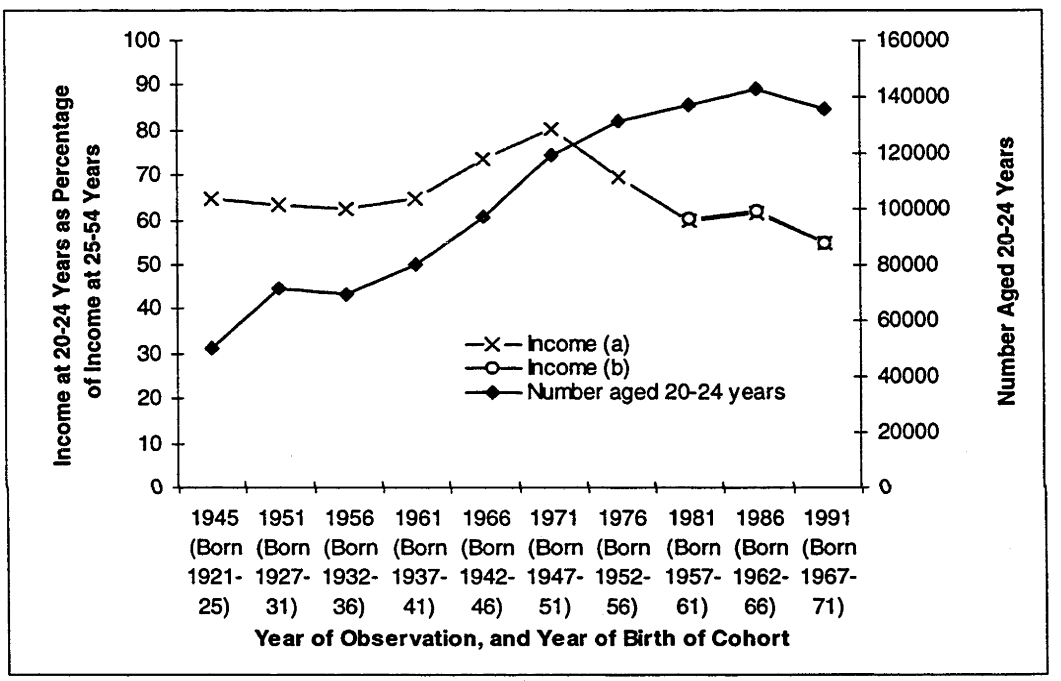


Source: *Census of Population and Dwellings* (see Appendix I.1)

Similar (though qualitatively different) caveats must be applied to the relationship between the cohort size of 20-24 year old males and their income relative to that of older males (25-54 years), shown in Figure 11.1.4. As the first of the baby boom cohorts reach age 20-24 in 1971, their income relative to that of 25-54 year old males begins a dramatic decline. (A similar relationship can be seen between 1945 and 1951, when an increase in cohort size corresponds with a small decline in income relativity, although the population data for 1945 were undoubtedly affected by the exclusion of males serving overseas.) However, between 1956 and 1971, when cohort size first begins to increase, income relativity follows suit (undoubtedly reflecting the post-war economic boom), and again, between 1981 and 1986, as cohort size approaches its peak, there is a small improvement. Similarly contradicting the hypothesis, the continuation of the overall decline between 1986 and 1991 corresponds with a decline in cohort size. Accordingly, support for the hypothesis on this indicator is somewhat less

consistent than suggested by the employment data, although in general the argument holds true. As implied above, the anomaly suggests the presence of saturation, or threshold effects, wherein the passing of an optimal cohort size corresponds with a substantial increase in competition. The anomaly is also likely to reflect recent increases in post-compulsory education, and/or the increase in part-time work shown in Chapter 7, both of which could themselves be a reflection of increasing cohort size.[1]

Figure 11.1.4
Cohort Size at Age 20-24 and Mean Income of Males Aged 20-24 as a Percentage of Mean Income of Males Aged 25-54, by Cohort, 1945-1991



Notes: Income (a) = Market Income; Income (b) = Total Income (includes benefit income)
Source: Population data: *Census of Population and Dwellings* (see Appendices D3 and D5)
Income: Easton 1997b, Table A.6 (see Appendix I.2)

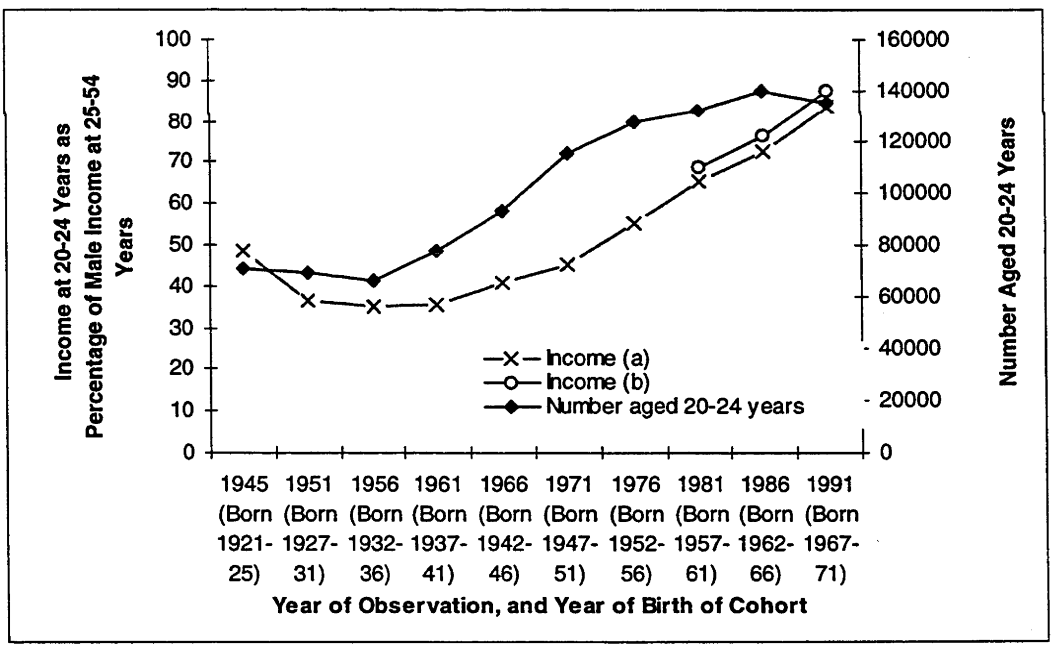
When the income relativities of 20-24 year old females are considered—again as a proportion of the incomes of 25-54 year old males[2]—there is almost no support for the hypothesis. Indeed, by contrast, the small decline in cohort size between 1945 and 1956, shown in Figure 11.1.5, is accompanied by a small decline in income relativity (which

[1] It should also be noted that income data for the 1981-1991 period are given separately in Figure 11.1.4 by both market and total income aggregations, the latter of which includes social security benefit income. The trends in relativity are identical, implying that they are not a function of labour force status.

[2] The income of males is used as the denominator for this index because that of 25-54 year old females will have been affected by similar trends to that of 20-24 year old females, and thus may not provide a meaningful trend.

may, as implied above, reflect an initial withdrawal from the labour market as males returned from the war and reclaimed their jobs. It may also reflect the beginnings of the baby boom). Thereafter, until 1986, both indicators increase in unison. The only vestige of support occurs during the period 1986-1991, when a small decline in cohort size is accompanied by a slight acceleration in the income of young females relative to 25-54 year old males. Nevertheless, at least for this indicator, the evidence is clearly insufficient. Accordingly, in the case of female cohort size and income relativity, the hypothesis cannot be upheld. That said, it must be noted (and recalled from Chapter 10) that the relative increase in female incomes *vis-à-vis* those of males has occurred in large part because of the absolute decline in male incomes. This factor has important implications for the analysis of changes in the timing of family formation, to which the focus now turns.

Figure 11.1.5
Cohort Size at Age 20-24, and Mean Income of Females Aged 20-24 as a Percentage of Mean Income of Males Aged 25-54, by Cohort, 1945-1991

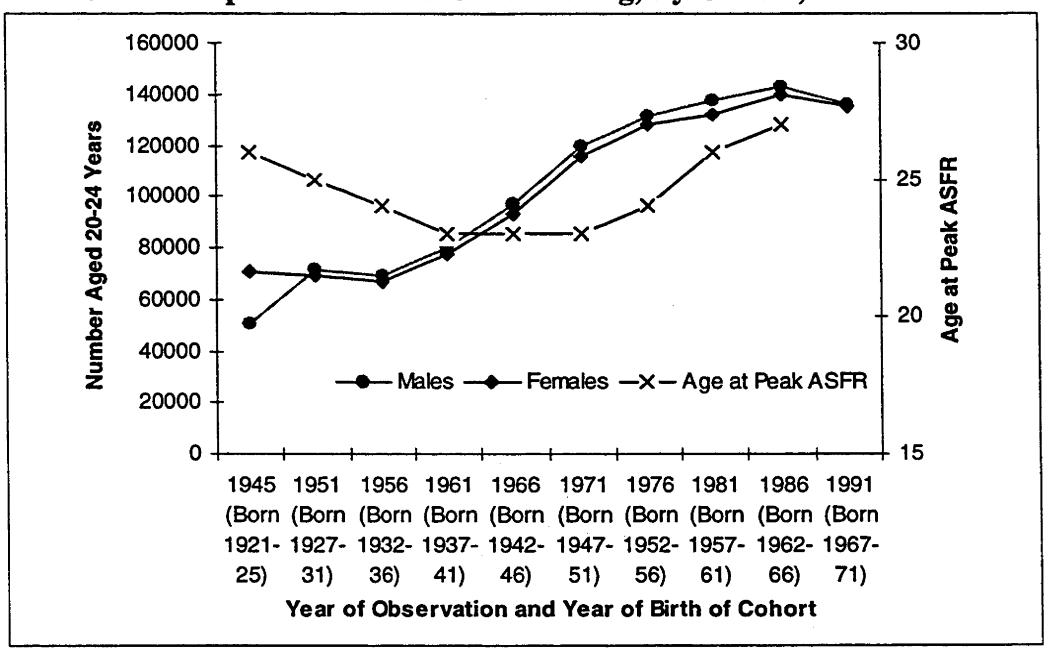


Notes: Income (a) = Market Income; Income (b) = Total Income (includes benefit income)
Source: Population data: *Census of Population and Dwellings* (see Appendices D3 and D5)
Income: Easton 1997b, Table A.6 (see Appendix I.2)

The second component of Easterlin's argument (albeit not fully elaborated by him) concerns the relationship between cohort size and the timing of family formation,

demonstrated in Figure 11.1.6 by the age at which each cohort experienced its peak age-specific fertility rate.[3] Clearly, the relatively smaller cohorts born between 1921 and 1946, and aged 20-24 years between 1945 and 1966, experienced a decline in the age at which family formation occurred, whilst the largest cohorts, born in the late 1940s through to the early 1960s, and aged 20-24 years during the 1960s and 1970s, initially experienced no decline but then suddenly delayed their childbearing. As is well known, these two groups represent the baby boom parents and their offspring, and not only support the Easterlin hypothesis, but were the principles upon which it was established. Nevertheless, also supporting the hypothesis of lower competition leading to accelerated childbearing for small cohorts, and vice versa, are the high and increasing proportions employed within the labour force shown above for those belonging to the pre- and earliest born baby boom cohorts, and the declining levels for the later and peak baby boom cohorts, for both males and females. (This is not to say that large cohort size is the *cause* of high unemployment, but its possible involvement cannot be dismissed.)

Figure 11.1.6
Cohort Size at Age 20-24 (Males and Females Separately) and Age At Which Each Cohort Experienced Peak Childbearing, By Cohort, 1945-1986

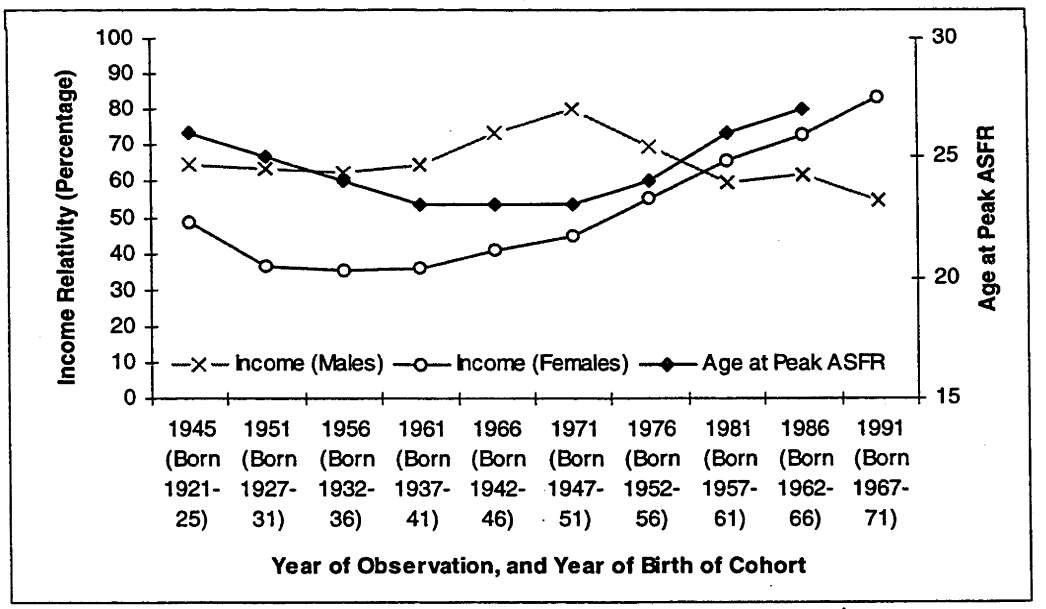


Source: Population data: *Census of Population and Dwellings* (see Appendix I.3)
Fertility data: Cheung, Jackson and Pool 1994 (see Appendix I.3)

[3] As explained in Chapter 4, this is the index of choice because it gives an indication of the experience of true cohorts, yet does not require completed fertility data. It is also preferable to that of median age at childbearing, because the latter is affected by changes and ethnic differences in age structure.

So too do the income data for males (shown in Figure 11.1.7) support the hypothesis. Indeed, the correlation between the mean income of 20-24 year old males relative to that of males aged 25-54 years, and the age at peak childbearing for each cohort across the 1945-1986 period, is strongly negatively correlated (r=-0.68), denoting that as the relative incomes of 20-24 year old males increase, age at childbearing declines, and vice versa. The correlation for females, on the other hand, is strongly positive (r=0.73), their increasing income relative to that of 25-54 year old males and increasing age at childbearing going hand in hand, and suggesting—intuitively correctly—that relatively low income for females is a consequence of early childbearing, and vice versa. However, as noted above, the improved relative income of females is largely a function of the declining incomes of males shown in the previous chapter, and thus, in terms of joint family formation, the fortunes of both must be seen together. Accordingly, it would seem that the hypothesis can still be supported, even given the improved relative incomes of females.

Figure 11.1.7
Mean Income of Males and Females at 20-24 Years as a Percentage of Mean Income of Males Aged 25-54 Years, and Age at which each Cohort experienced Peak Childbearing, by Cohort, 1945-1991



Notes: Market Income only
Source: Income: Easton 1997b, Tables A.4 and A.6 (see Appendix I.2)
Fertility data: Cheung, Jackson and Pool 1994 (see Appendix I.3)

The central tenets of the Easterlin hypothesis thus appear to hold generally true in relation to the within-labour force employment experience of both males and females,

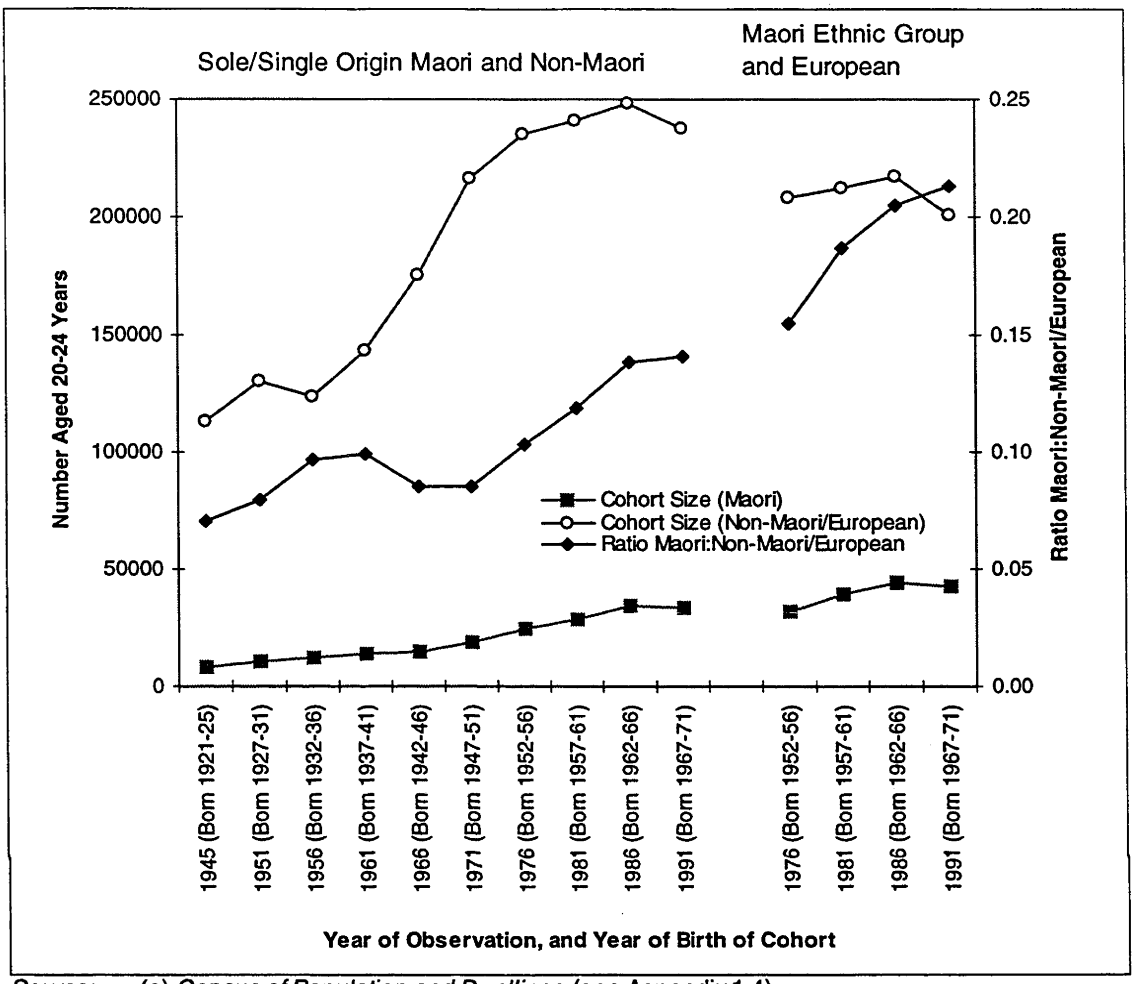
the income of males, the employment-population ratio for males, and the timing of childbearing, but are questionable in relation to income and the employment-population ratio for females. They also indicate that both threshold and lag effects may be involved, the former delaying the onset of decline in employment or income relativity until a certain level of cohort size is exceeded, and the latter extending the effects to at least the first of the smaller cohorts following a very large one—possibly because the first smaller cohort is to some extent competing with the immediately preceding larger cohort. Such exceptions, of course, only assist in 'proving' the theory, and for validity require re-examination against contemporary and future data, when these become available. Along with questions about participation in tertiary education, it would also appear that such an examination would benefit from standardisation and/or component analysis.

In the interim, the potential relevance of the arguments for ethnic stratification cannot be ignored. In particular, it is important to ascertain whether the large baby boom cohorts, which were European in origin—as explained in Chapter 6, the Maori population did not experience a baby boom *per se*—were encountered by large or small Maori cohorts, and thereby whether or not the declining labour force and income relativities identified for Maori in Chapters 7 and 10 could be explained by this factor.

11.2 THE EASTERLIN HYPOTHESIS IN AN ETHNIC CONTEXT

Figure 11.2.1 shows the absolute size of cohorts when aged 20-24 years, for both the Maori and non-Maori, and Maori Ethnic Group and European populations, and the ratios of Maori to non-Maori/European. Except for the dip in 1956 for non-Maori, the former cohort size data identify a generally consistent upward trend for both ethnic groups until 1986, when births from the peak and immediate post-peak of the baby boom (1962-1966) reached 20-24 years of age. Thereafter cohort size declined for both groups. The latter ratio data show that, with the exception of cohorts born 1942-1951, at the beginning of the baby boom, each successive Maori cohort when aged 20-24 years has comprised a greater proportion of its total cohort than its predecessor, and this also occurs for the post-peak cohorts born 1966-1971, which saw an absolute decline in size. By contrast, for those born at the beginning of the baby boom, the result was a short-term reduction in the proportion of Maori in each cohort, indicated by the dip in the trend line between 1961 and 1976.

Figure 11.2.1
Cohort Size of Maori and Non-Maori/European and Ratio of Maori to Non-Maori/European, by Ethnic Classification, Year when Cohort Aged 20-24 Years, and Year of Birth of Cohort, Males and Females Combined, 1945-1991



Source: (a) *Census of Population and Dwellings* (see Appendix 1.4)
(b) Database B (see Appendix I.4)

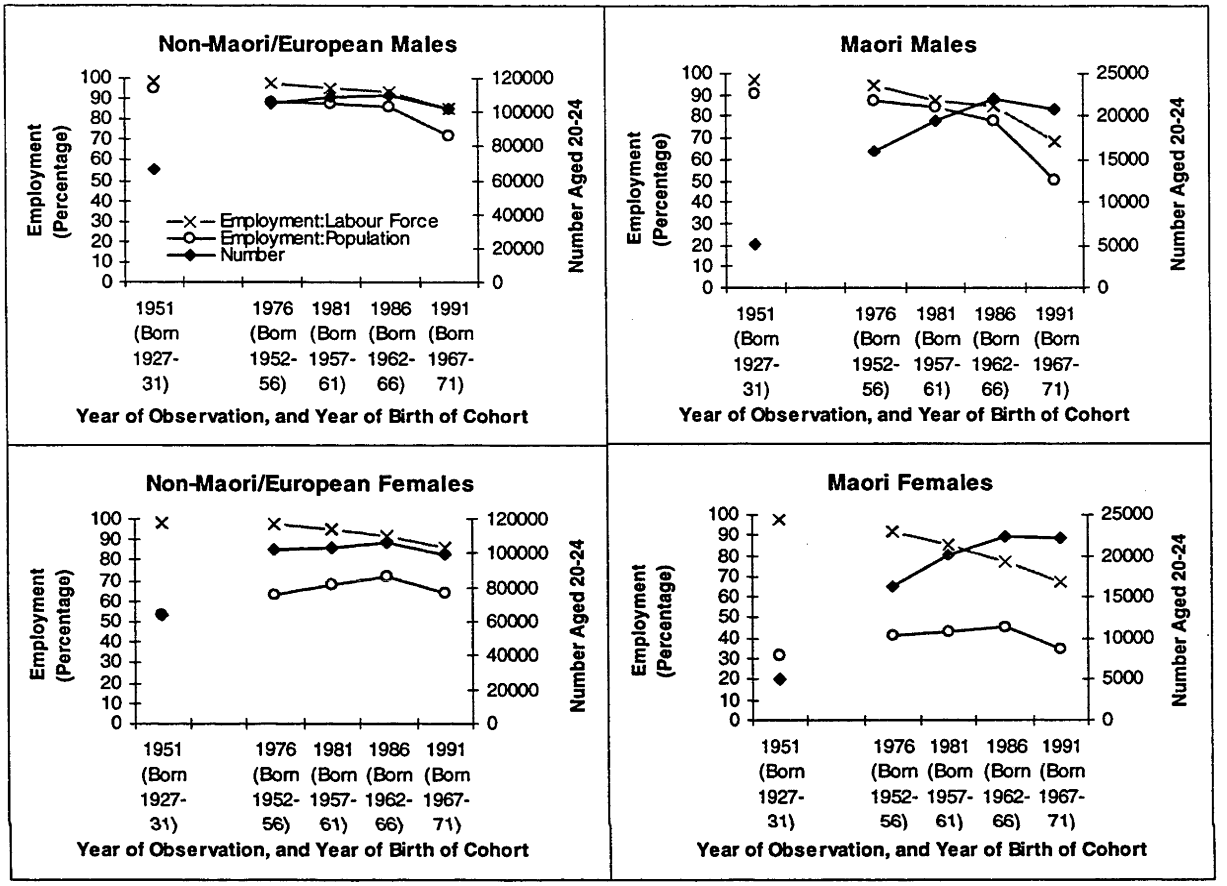
The implications of these trends for competition between Maori and non-Maori in each cohort are ambiguous. Under a strict interpretation of the Easterlin hypothesis, the key dynamic determining competition is the size of the total cohort, in which case those of either group born around the peak of the non-Maori baby boom would be expected to have experienced greater levels of competition than their respective predecessors. The same could also be argued for each ethnic group *per se*, those born into large cohorts experiencing greater competition than their smaller predecessors, and vice-versa. However, from an internal colonialism perspective, a successive increase in the proportion of Maori in each cohort could also be theorised as engendering a potential increase in resistance on the part of its non-Maori/European counterpart,

whilst for those Maori cohorts which showed a proportionate decline (those born around the beginning of the non-Maori baby boom) the same argument would imply less resistance. That is to say, non-Maori/European in total cohorts containing increased proportions of Maori would be likely to experience an increase in competition for resources, and vice-versa. Accordingly, and whilst data limitations make such an analysis very difficult, this section explores the original tenets under the auspices of the 'classic' hypothesis, carrying out the analysis at the level of the ethnic group; and the latter proposition under the auspices of the 'expanded' hypothesis, as explained in Chapter 4. Where data are available, particular attention is paid to the experience of the smaller Maori cohorts relative to non-Maori born 1942-1951, and aged 20-24 years between 1966-1971, *vis-à-vis* the experience of the larger Maori cohorts relative to non-Maori born since, especially those born during the peak of the baby boom (1962).

Beginning with the classic hypothesis at the level of each ethnic group, Figure 11.2.2 shows that the relationship between the proportion employed within the labour force and cohort size has indeed been negative for both ethnic groups and both sexes. That is to say, when cohort size was relatively low, in 1951, the proportion employed within the labour force was very high, for all groups. Between 1976 and 1986, as cohort size increased to its peak, the proportion employed fell, supporting the hypothesis. Indeed, that it did so to a considerably greater extent for Maori (for example, a 10 per cent decline in the proportion employed within the labour force for Maori males; a 4 per cent decline for European males) may reflect the fact that the increase in cohort size was also considerably greater for Maori (40 per cent, compared with 5 per cent for European).

However, for all groups, the decline in the proportion employed within the labour force accelerated between 1986 and 1991, when cohort size fell (rate for males falling a further 20 per cent for Maori, compared with 9 per cent for European), trends that run counter to the hypothesis and suggest the involvement of factors external to the cohort. So too, as argued earlier for all females, do trends for females of both ethnic groups when the initially positive trends in their respective employment to population ratios are considered. That said, as also proposed above, the possibility of a lag effect operating after 1986, whereby smaller cohorts born immediately after the peak cohort continue to experience the saturation-effects of the latter, is plausible. Alternatively, the classic hypothesis cannot be sustained after 1986.

Figure 11.2.2
Cohort Size at Age 20-24, Percentage of 20-24 Year Olds in Employment (Employment to Population Ratio), and Percentage of 20-24 Year Olds in Employment within the Labour Force, by Sex, Ethnic Classification and Cohort, 1951 and 1976-1991



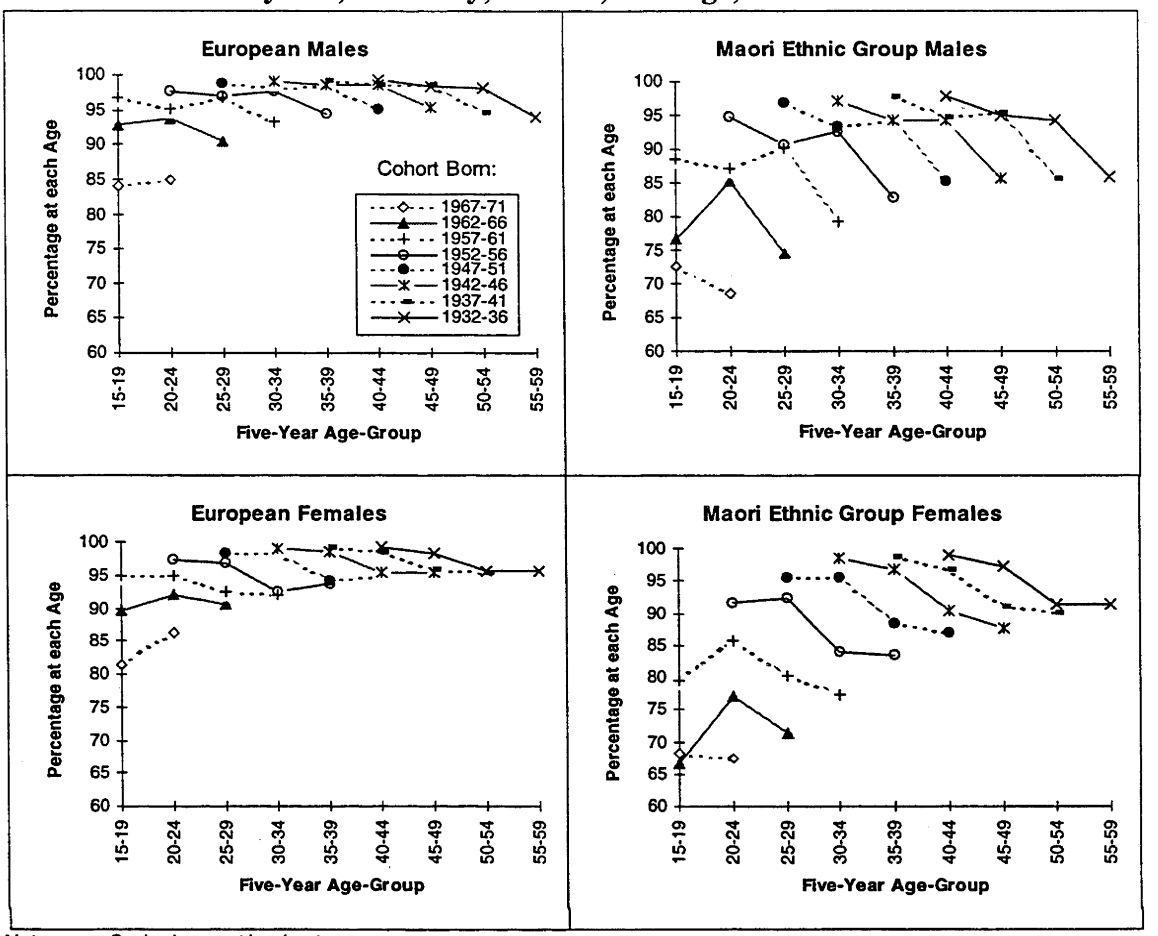
Notes: Different scales for population numbers of each ethnic group.
1951 = Sole Maori and Non-Maori; 1976-1991 = Maori Ethnic Group and European

Source: 1951: *Census of Population and Dwellings*; 1976-1991, Database B (see Appendix I.5)

The argument that cohort size is not the only factor operating is also strongly suggested in Figure 11.2.3, which examines trends in proportions employed (full-time plus part-time) within the labour force across the life cycle, for the period 1976-1991.[4] This approach permits a review of the experience at older ages of the cohorts missed from Figure 11.2.2.

[4] These data differ from those given in Chapter 7, Figure 7.1.6, which pertained to the employment-population ratio, whereas those in Figure 11.2.3 pertain to the labour force, the index that Easterlin was primarily concerned with.

Figure 11.2.3
Proportion of each Age Group in Employment within the Labour Force, by Sex, Ethnicity, Cohort, and Age, 1976-1991



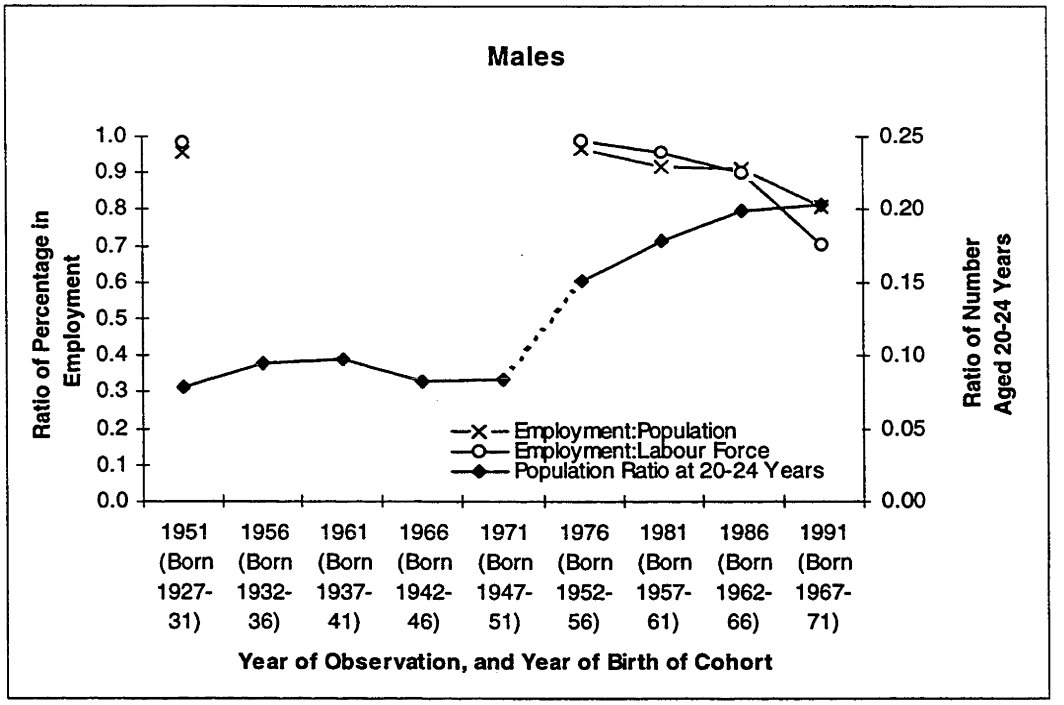
Notes: Scale does not begin at zero
For all cohorts with four observations, first observation = 1976, last observation = 1991
Source: Database B (see Appendix E.5.2)

First and most obvious from Figure 11.2.3 is a decline in the proportions in employment across the life cycle for almost all cohorts; the fact that inequality is greatest for the youngest cohorts (albeit with one exception noted below); and the considerably greater magnitude of the trends for Maori. The two latter points provide some support for the classic hypothesis. So too does the experience of the post-peak European cohort (both sexes), born 1967-1971, which saw an absolute decline in size, and whose employment experience is positive, running counter to the trends for all others. However, for males of both ethnic groups, the age-span which corresponds to the 1981-1986 period shows a general improvement across that period *irrespective of cohort.* A similar improvement occurs for the female cohorts born 1957-1966, across the age span corresponding to the 1976-1981 period. If cohort size *per se* was the cause of the overall decline *vis-à-vis* older cohorts, such a universally-experienced improvement

would not be expected. Nor would the universality of the overall deterioration *per se* be expected. That is to say, the older, smaller cohorts would not also be expected to show such a decline. From the perspective of cohort analysis, therefore, and although the hypothesis can be neither accepted nor rejected, it would seem that the trends reflect factors (such as changes in demand, and policy changes) that are largely external to the cohort.

Turning to the expanded hypothesis, Figure 11.2.4 compares relative cohort size with the relative employment experience of Maori Ethnic Group and European male cohorts when aged 20-24 years. Again, unfortunately, no age data for the all-important 1956-1971 period exist. Either side of this period, however, it can be seen that when the ratios of cohort size were at their lowest, in 1951, the ratios of the proportions in employment were near unity (=1.00), irrespective of the denominator of the index (that is, whether labour force- or population-based). By contrast, as the ratios of cohort size increased between 1976 and 1991, the ratios of the proportions in employment fell, and did so particularly for the cohorts born 1967-1971. The latter are the cohorts which saw absolute declines in size, but a continued increase in the ratio of Maori to non-Maori/European cohort size. Accordingly, it can be concluded—on the limited evidence available—that the expanded Easterlin hypothesis (that increased inter-ethnic competition correlates with a decline in the ratio of the proportion of Maori to European in employment) is more strongly supported than the classic hypothesis, at least for males.

Figure 11.2.4
Relative Cohort Size at Age 20-24 (Maori to Non-Maori/European), Ratio of Maori to Non-Maori/European in Employment (Employment to Population Ratio) when Cohort Aged 20-24, and Ratio of Maori to Non-Maori/European in Employment Within the Labour Force when Cohort Aged 20-24, Males, Selected Years, 1951-1991

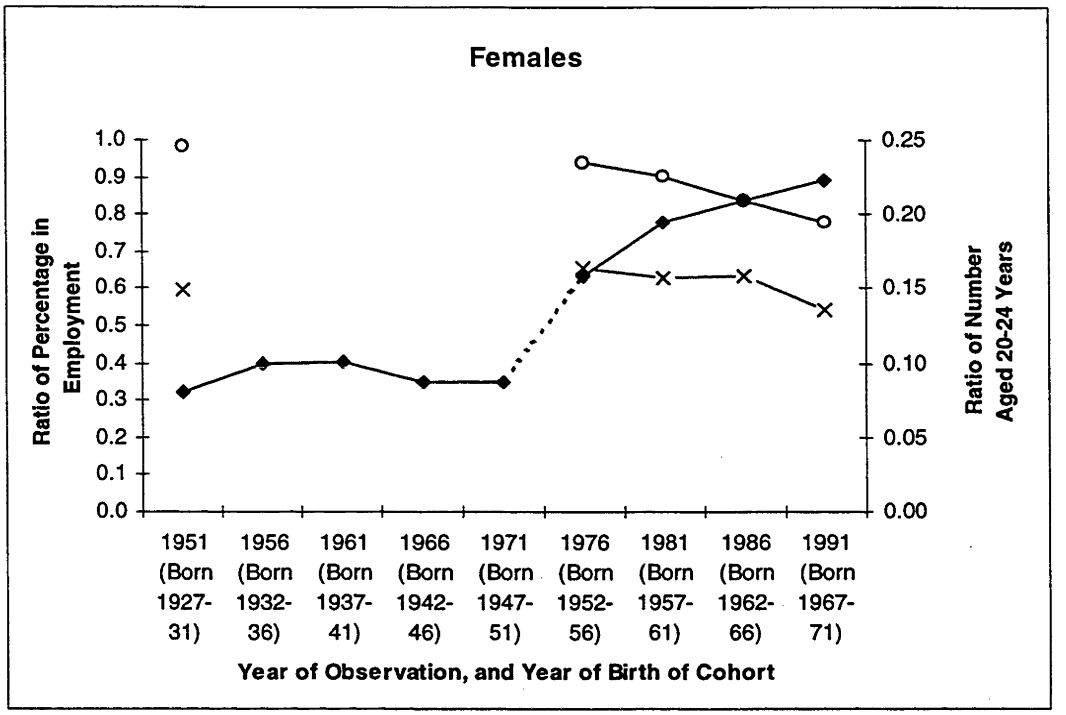


Notes: *1951-1971 = Sole/Single Origin Maori: Non-Maori;
*1976-1991 = Maori Ethnic Group: European.

Source: 1951-1971: Compiled from *Census of Population and Dwellings* (see Appendix I.5
1976-1991: Database B (see Appendix I.5)

Figure 11.2.5 shows that trends for females have been very similar, albeit with the exception that the ratio of the proportion of the population in employment is much lower for females, denoting greater ethnic inequality amongst females. As with males, when the ratios of Maori to non-Maori cohort size were at their lowest, in 1951, the ratios of the proportions in employment within the labour force were near unity. As the ratios of cohort size increased, between 1976 and 1991, the ratios of proportions in employment fell, and did so by a similar magnitude to that for males. Thus the expanded hypothesis on this indicator also holds true for females.

Figure 11.2.5
Relative Cohort Size at Age 20-24 (Maori to Non-Maori/European), Ratio of Maori to Non-Maori/European in Employment (Employment to Population Ratio) when Cohort Aged 20-24, and Ratio of Maori to Non-Maori/European in Employment Within the Labour Force when Cohort Aged 20-24, Females, Selected Years, 1951-1991



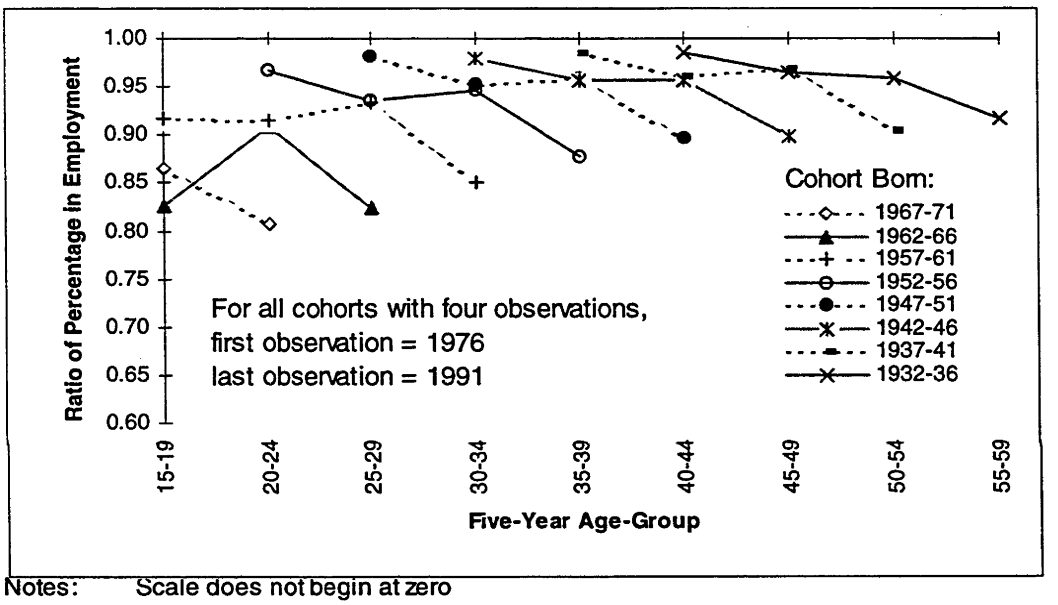
Notes: *1951-1971 = Sole/Single Origin Maori: Non-Maori;
*1976-1991 = Maori Ethnic Group: European.

Source: 1951-1971:Compiled from *Census of Population and Dwellings* (see Appendix I.5)
1976-1991: Database B (see Appendix I.5)

Because the data limitations prevent an examination of trends at age 20-24 for the older, relatively smaller cohorts, Figure 11.2.6 again employs conventional cohort analysis to show the relativity ratios of the proportion of the Maori Ethnic Group and European labour forces who are in employment (unity=1.00), across the life cycle, for the 1976-1991 period. Immediately obvious is an overall increase in ethnic inequality across the life cycle for almost all cohorts; a general improvement or levelling off during the age-span corresponding to the 1981-1986 period (as noted above for males of each ethnic group); and the fact that level of inequality is positively related to cohort birth year: the more recent the year of birth, and hence higher birth year, the greater the inequality. That is to say, with the sole exception of the observations that correspond to 1986 for each cohort, each more recently born cohort has experienced lower relative employment than its predecessor cohort, when at the same age. As above, the latter

finding provides general support for the expanded hypothesis. However, the initial improvement in the relative employment of Maori *vis-à-vis* European for the cohort born over the peak and immediate post-peak of the baby boom (1962-1966) should also be noted. Corresponding with the 1981-1986 period, the trend again supports the argument that factors other than—or additional to—cohort size were operating, a contention reinforced by the subsequent deterioration during the 1986-1991 period for that cohort, and by the general universality of the trends for all other cohorts.

Figure 11.2.6
Ratios of Proportion of Maori to European in Employment Within the Labour Force in Each Age Group, by Cohort and Age, Males, 1976-1991

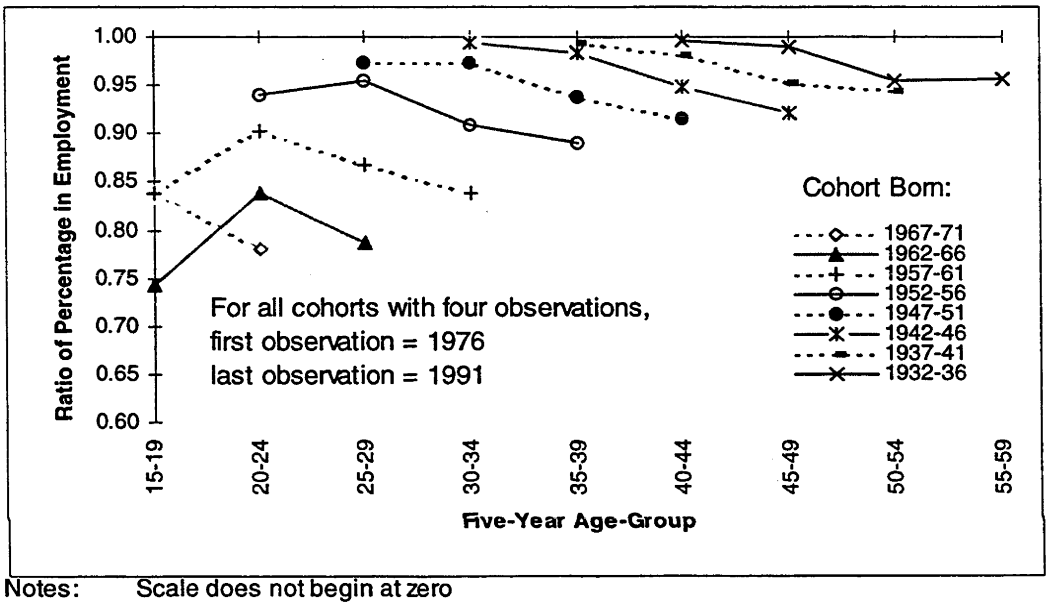


Notes: Scale does not begin at zero
Source: Database B (see Appendix I.6)

Trends across the life cycle for females, shown in Figure 11.2.7, are very similar to those for males, including the initial improvement in the ratio of proportions of Maori to European in employment for the cohort born 1962-1966, over the peak of the baby boom, the greatest levels of inequality for the most recently born cohorts, and the lowest levels for the earlier born cohorts. However, where the trends for males showed a general improvement across the age-span corresponding to the 1981-1986 period, the same period was one of substantial deterioration for all females born prior to 1961. Conversely, where the period 1976-1981 had shown a general decline for males, it showed a general improvement for females, especially for the cohorts born 1952-1966. Again these trends imply the presence of factors other than cohort size. Furthermore, the deterioration in equality for each of the more recently born cohorts when at the same

age as their predecessor, is also—almost without exception—greater than that for males, as is the level of inequality for the cohort born 1962-66. Thus, whilst there is again some support for the expanded hypothesis, it is not unqualified support, and suggests the significant involvement of factors both external to cohort size, and specific to sex.

Figure 11.2.7
Ratios of Proportion of Maori to European in Employment Within the Labour Force in Each Age Group, by Cohort and Age, Females, 1976-1991

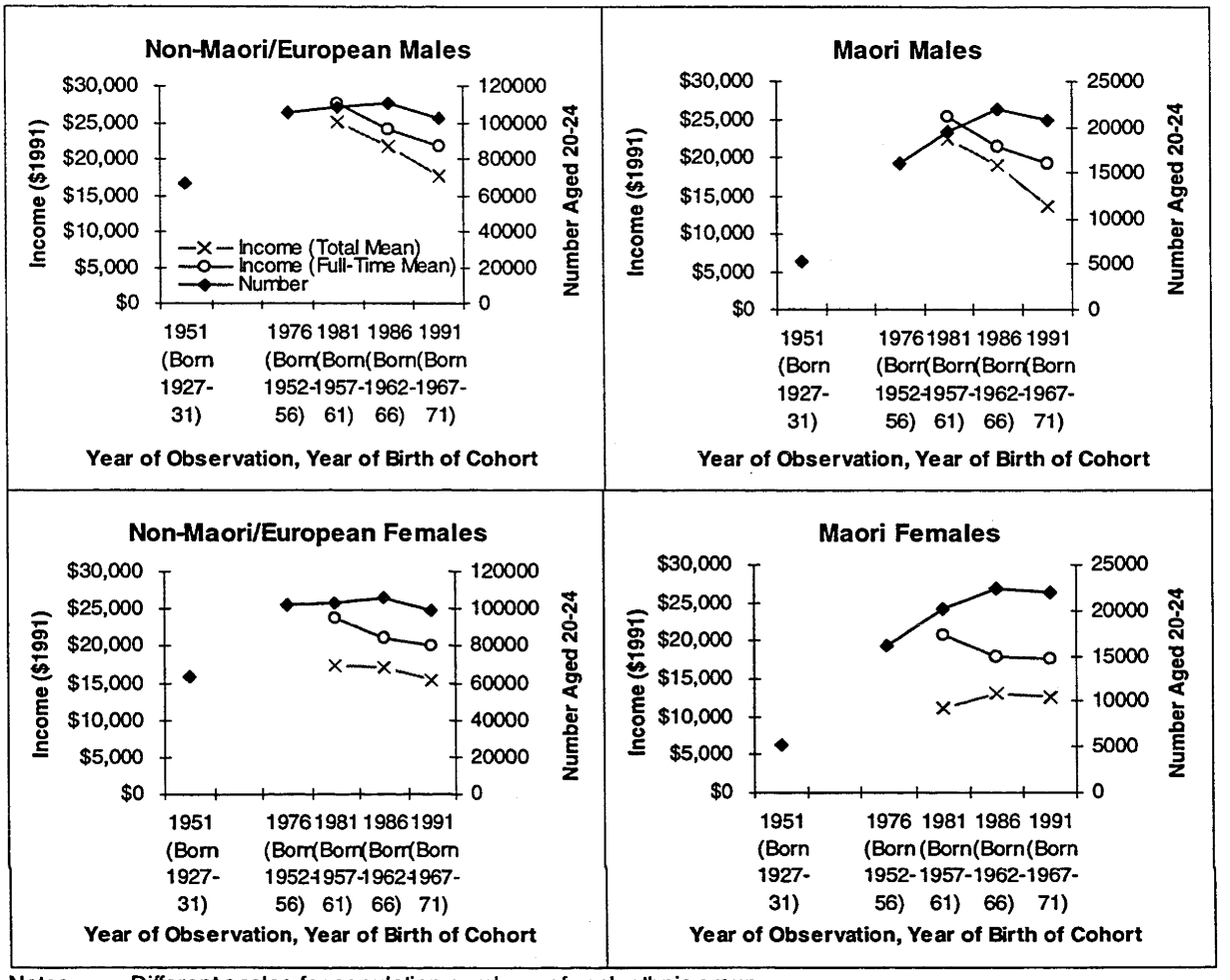


Notes: Scale does not begin at zero
Source: Database B (see Appendix I.6)

11.2.1 Cohort Size and Income:

Turning to the relationship between cohort size and income under the classic hypothesis (which holds that large cohorts experience declining mean incomes, and vice-versa), Figure 11.2.8 shows that, with the exception of mean total income for Maori females, trends between 1981 and 1986 generally support the hypothesis, whilst those between 1986 and 1991 again suggest the presence of a lag effect, or refute the hypothesis. That is to say, with the exception of mean total income for Maori females, for whom the trend stays level, mean income between 1981 and 1986 for all other groups declines as cohort size increases. Between 1986 and 1991, however, mean income continues to decline as cohort size also begins to decline.

Figure 11.2.8
Cohort Size at Age 20-24, Mean Total Income of 20-24 Year Olds, and Mean Total Income of 20-24 Year Olds in Full-Time Employment, by Sex, Ethnic Classification and Cohort, 1951 and 1976-1991



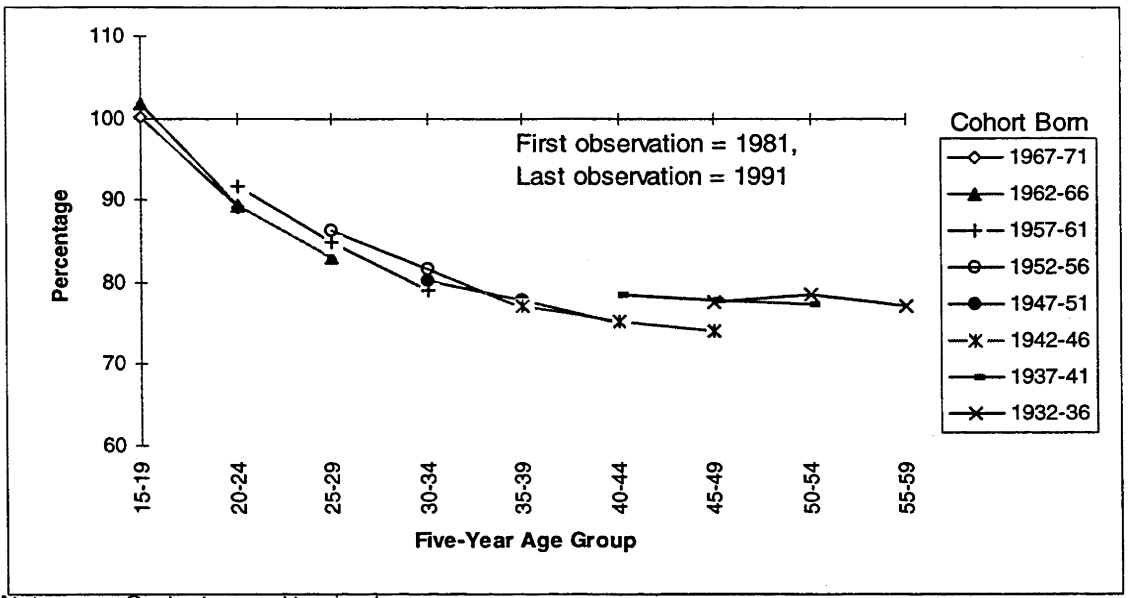
Notes: Different scales for population numbers of each ethnic group.
1951 = Sole Maori and Non-Maori; 1976-1991 = Maori Ethnic Group and European.

Source: 1951: Compiled from *Census of Population and Dwellings*; 1976-1991, Database B (see Appendix I.7)

When the full-time income data (which was the indicator used by Easterlin) are reviewed in terms of the ratio of Maori mean income to European mean income (income relativity) across the life cycle, as in Figure 11.2.9 for males, a substantial decline in this ratio is shown for almost all cohorts. As with the cohort analysis of employment relativities, inequality is generally positively related to year of birth: the more recent (higher) the birth year of the cohort, the greater the level of inequality when at the same age as its predecessor. Indeed, whilst the level of inequality *per se* at the last observation shown here (1991) is greatest amongst the earliest born cohorts, those born prior to and in the early years of the baby boom, when the proportion of Maori in each cohort was relatively low, the declines across the life cycle are by far the greatest for those born

since the 1950s, during the peak baby boom years, when the proportion of Maori in each cohort also increased to its peak.

Figure 11.2.9
Income Relativity: Maori Ethnic Group Mean Income as a Percentage of European Mean Income for those in Full-Time Employment, Males, by Cohort and Age, 1981-1991



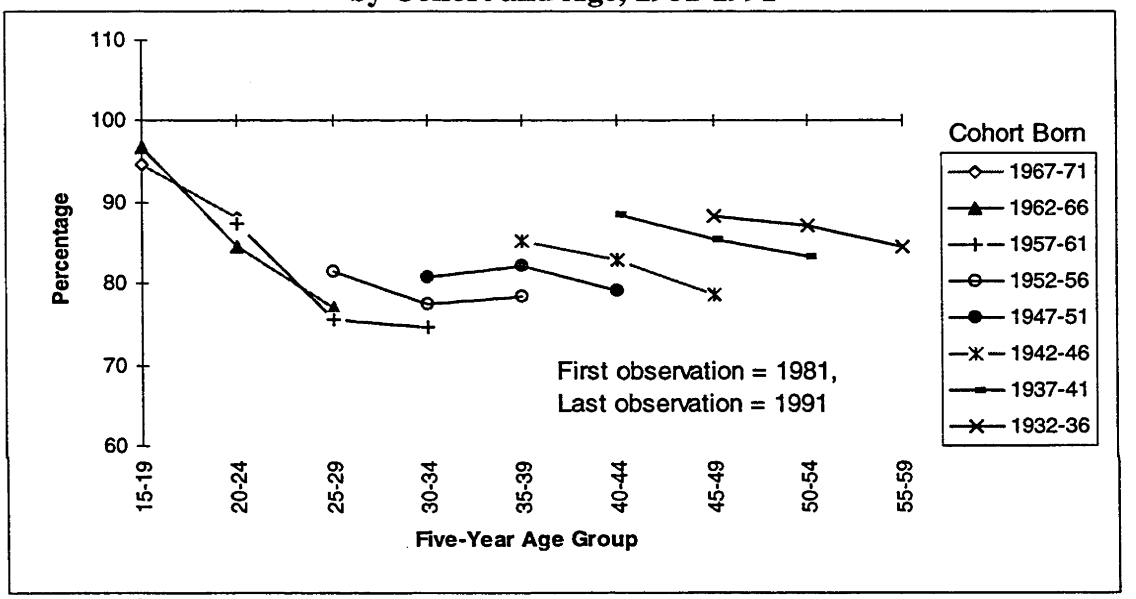
Notes: Scale does not begin at zero
Source: Database B (see Appendix I.8)

Under the expanded hypothesis, these patterns suggest that the existence of relatively low proportions of Maori in the earliest born cohorts has not in fact resulted in greater income equality for those cohorts, although this cannot really be determined until additional data for the most recently born cohorts become available. Nevertheless, these factors may, on the other hand, have prevented or ameliorated the decline that has been experienced by the most recently born cohorts. By contrast, the decline in equality experienced by the most recently born cohorts, with their greater proportions of Maori, give strong support to the hypothesis. Accordingly, on this indicator, the expanded hypothesis can be neither fully supported nor rejected.

Patterns for females (Figure 11.2.10) differ quite substantially, although the general decline in ethnic equality across the life cycle for male cohorts is equally apparent for females, as is the fact that the decline in inequality is greatest for the most recently born cohorts (those born around the peak of the baby boom), whilst the relatively small cohorts born during the 1930s have experienced the lowest levels of deterioration across the life cycle. For females, however, inequality *per se* is also lowest

at the oldest ages—where for males it was highest—and greatest as cohorts passed through their late twenties and early thirties. Thereafter the cohorts born in the late 1940s to early 1950s experience a small improvement, but, at least for the cohort born 1947-1951, the gain was short-lived. Also for all female cohorts born prior to 1961, there is considerably greater difference between cohorts (inter-cohort inequality), when at the same age as the predecessor cohort.

Figure 11.2.10
Income Relativity: Maori Ethnic Group Mean Income as a Percentage of European Mean Income for those in Full-Time Employment, Females, by Cohort and Age, 1981-1991



Notes: Scale does not begin at zero
Source: Database B (see Appendix I.8)

In contrast to the earlier findings for all females, which were based on their income relative to that of males, this experience of females more fully supports the Easterlin hypothesis. That is to say, ethnic inequality is both lowest, and experiences the smallest increase across time, for those born prior to and during the early years of the baby boom, when the proportions of Maori in each total cohort were relatively small. By contrast, inequality is greatest and increases the most for those born during the peak years of the baby boom, when the proportion of Maori in each cohort was much greater. Importantly, the patterns are very similar—though less pronounced—when total income, rather than income from full-time employment only is used (see Chapter 10, Figure 10.3.1), the former perhaps the more valid indicator in the case of females. The main

difference in the total income trends pertains to the cohorts born 1952-1961, for whom an overall improvement in ethnic equality occurred over the peak childbearing years. As implied in Chapter 10, that improvement may reflect ethnic differences in childbearing patterns, to which the chapter now turns, or alternatively, the relative improvement in the incomes of those not in the labour force and/or without qualifications, *vis-à-vis* those in employment and with qualifications, rather than being an effect of cohort size *per se*.

11.3 BIRTH, FORTUNE AND ETHNIC DIFFERENTIALS IN THE TIMING OF CHILDBEARING

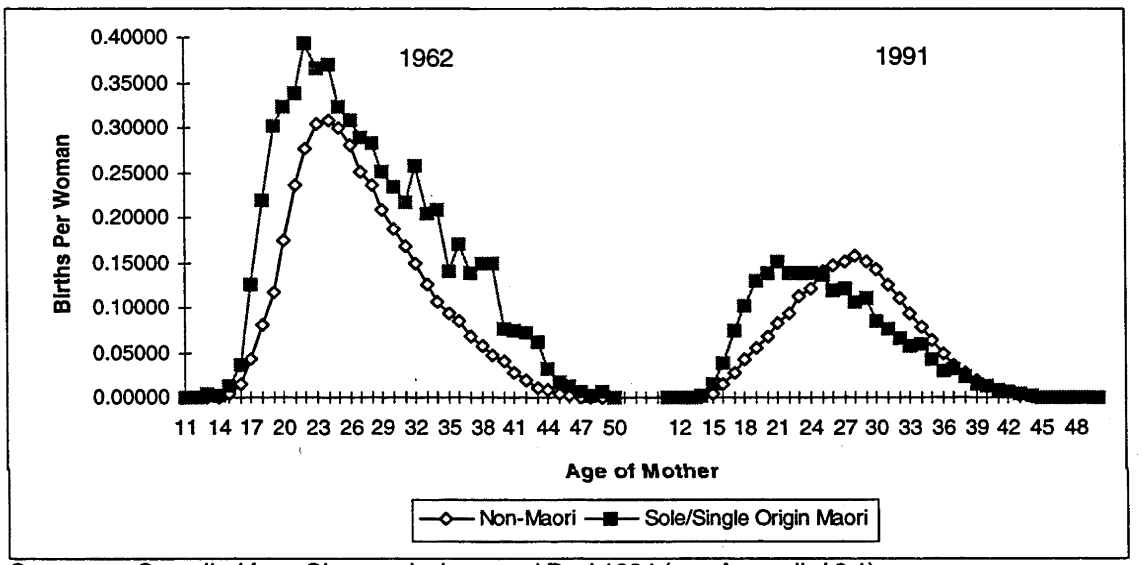
The relationship between family size, female labour force participation and female earnings is well recognised and has been broadly studied. Considerably less attention, however, has been paid to the relationship between ethnic differences in the timing of family formation, and the relative material well-being of the Maori and European populations. As explained in Chapters 4 and 5, the problems of undertaking such an analysis are many-fold, reflecting a lack of micro-level data; serious data discontinuities (fertility data being collected on a biological—blood fraction—basis, and census data on a changing mixture of biological and cultural criteria); and, not least, the fact that conjugal partners often come from different ethnic groups. The analysis that follows is highly subject to these same shortcomings. In general, it means shifting between period and cohort measures and differing ethnic classifications, and acknowledging that the trends and patterns can be broadly indicative only.

First, Figure 11.3.1 provides an indication of changes in the timing of fertility between Maori and non-Maori women. Importantly, as explained in Chapters 4 and 5, the data show the *ratio* of births classified Maori or non-Maori, to women of matching ethnic classification, and are thus not technically correct measures of the reproductive *behaviour* of women (i.e. rates).[5] Nevertheless, the ratio and rate data differ only minimally (Jackson 1995b), and in the absence of appropriate single-year-of-age data with which to construct 'true' behavioural rates for the period prior to 1981, provide a reasonably accurate view of longer-term trends.

[5] As explained in chapters 4 and 5, the numerators that have been historically used for the construction of fertility rates reflect the ethnicity of the child, constructed from the combined blood fraction of the parents. In some cases this has meant that births to Maori or non-Maori women have been assigned to the opposite group, with the result that the resulting 'rates' do not accurately reflect the reproductive behaviour of the women involved. The problem is detailed in Jackson 1995b.

Most immediately apparent from Figure 11.3.1 is the substantial decline in fertility levels between 1962, the peak of the baby boom (the first year that detailed Maori data were collected), and 1991. However, it is not the levels, but the timing of fertility that this section is concerned with. In 1962, only two years separated the period peak ASFRs of Sole/Single Origin Maori and non-Maori women, whilst by 1992 this gap had increased to more than seven years (see also Jackson, Pool and Cheung 1994).

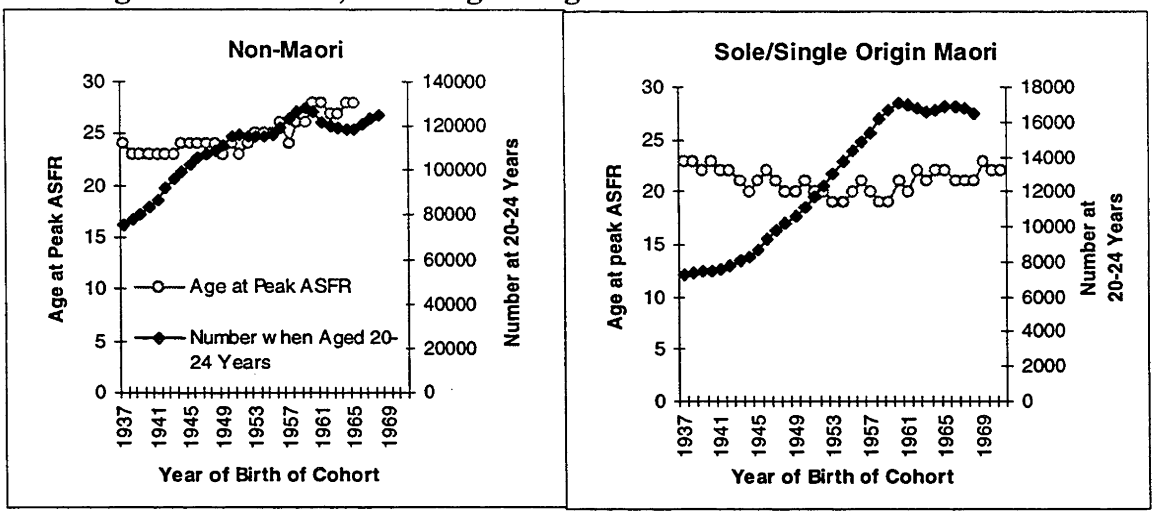
Figure 11.3.1
Age-Specific Fertility Ratios, Sole/Single Origin Maori and Non-Maori Females, 1962 and 1991



Source: Compiled from Cheung, Jackson and Pool 1994 (see Appendix I.9.1)

Turning first to the classic hypothesis, Figure 11.3.2 shows the relationship between cohort size and the timing of peak fertility for Sole/Single Origin Maori and non-Maori cohorts separately. The correlation for non-Maori (r=0.68) is quite strong, but negative for Maori (r=-0.40), suggesting that if the classic hypothesis holds true—that successively larger cohorts delay their childbearing *vis-à-vis* their smaller predecessors, it does so only for non-Maori. That is to say, age at peak childbearing increased for non-Maori as cohort size increased, but saw an overall decline for Maori. However, the possibility of a lag/threshold effect cannot be ruled out, with age at peak childbearing increasing for Maori as peak cohort size was passed.

Figure 11.3.2
Family Formation and Cohort Size: Age at which Peak Age-Specific Fertility Ratio has Occurred for Cohorts Born 1937-1971, and Cohort Size when Cohort Aged 20-24 Years, Sole/Single Origin Maori and Non-Maori Females

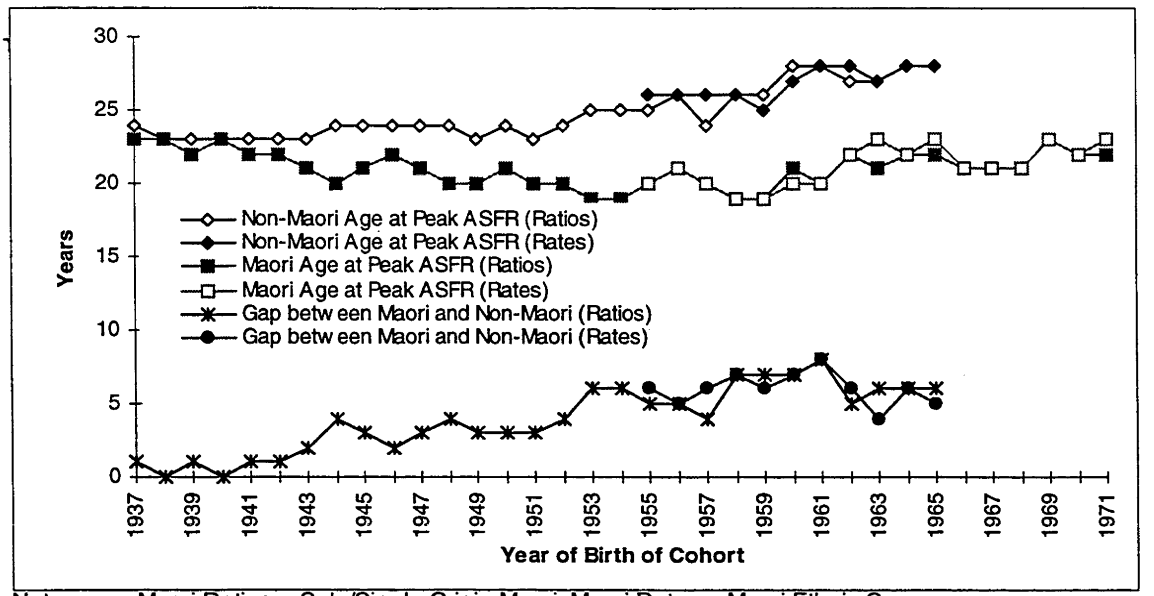


Notes: Data not shown for cohorts where most recent observation = highest ASFR yet completed.
Numbers aged 20-24 years on different scales.
Source: Compiled from Cheung, Jackson and Pool 1994 (see Appendices I.4 and I.9.1)

Direct comparison of the fertility data, shown in Figure 11.3.3, identifies that the gap between Maori and non-Maori in peak age at childbearing increased from 0-1 year for cohorts born in the late-1930s and beginning their reproductive careers around 1960, to 8 years for cohorts born 1958-1961, beginning their reproductive careers in the late 1970s - early 1980s. However, for those cohorts which have more recently passed their peak childbearing, thus those born in the years immediately after the peak of the baby boom, when the proportion of Sole/Single origin Maori in each cohort was at its greatest, and when Maori age at peak childbearing became slightly older, the gap declined to around 6 years. Thus there is some evidence that the expanded hypothesis holds true. That is to say, as inter-ethnic competition increased, age at peak childbearing underwent an upward shift for Maori. Furthermore, the patterns differ very little by the two different ethnic classifications of Maori shown in Figure 11.3.3, although the more recent gap is a slightly smaller between the Maori Ethnic Group and non-Maori, as opposed to that for the Sole/Single Origin Maori and non-Maori, populations. That said, it can also be seen that Maori cohorts born 1965-1971 have already passed their peak childbearing, having done so around age 21-23, whilst data to 1991 indicate that the peak has not yet been passed for their non-Maori counterparts, meaning that in the short-term, the gap will remain approximately as it is.

Figure 11.3.3

Age at which Peak Age-Specific Fertility Ratio/Rate has Occurred for Female Cohorts Born 1937-71, by Ethnic Classification and Year of Birth of Cohort

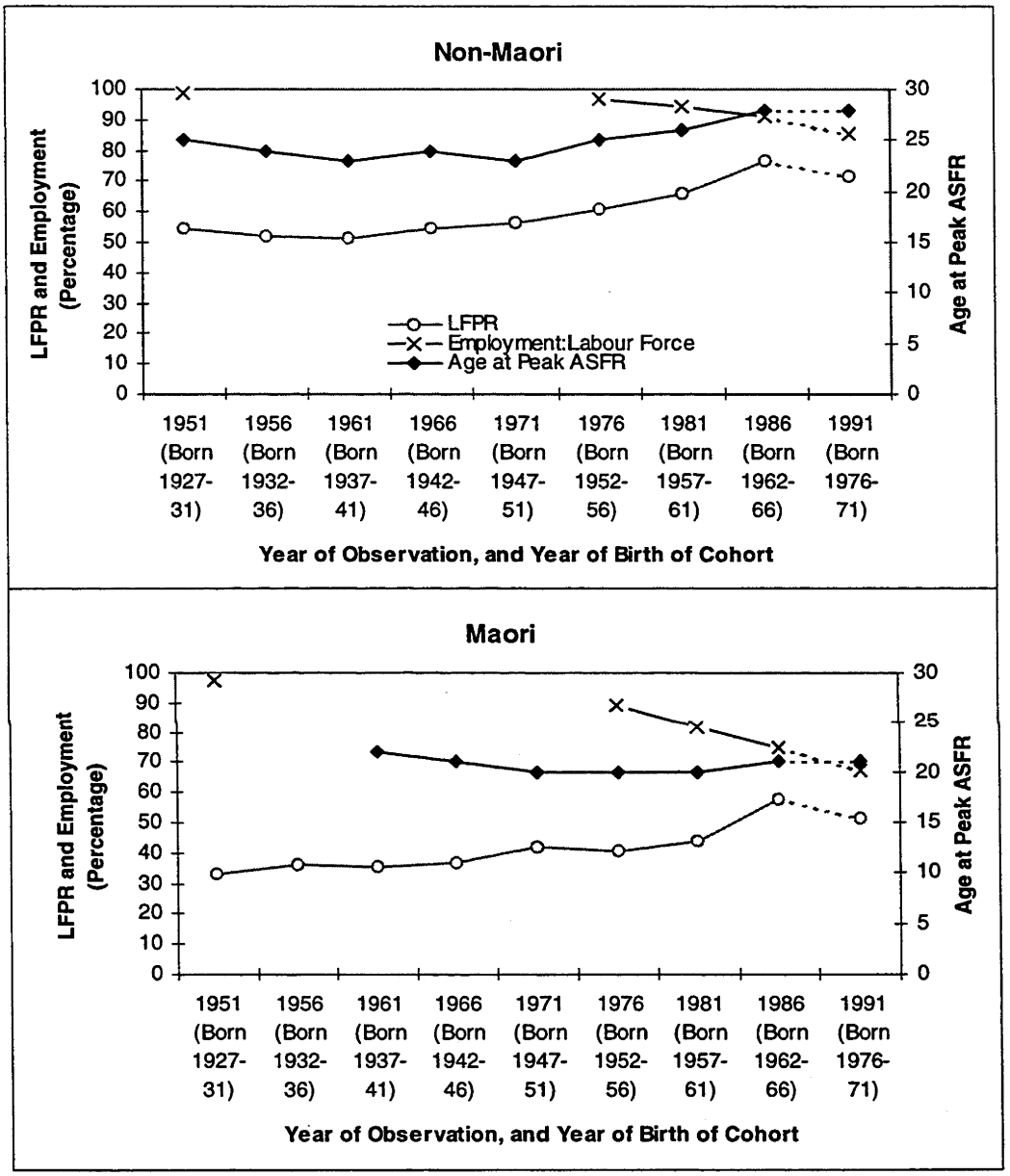


Notes: Maori Ratios = Sole/Single Origin Maori; Maori Rates = Maori Ethnic Group
Non-Maori Rates/Ratios = Total minus specified Maori classification
Data not shown for cohorts where most recent observation = highest ASFR yet completed.

Source: Ratios: Compiled from Cheung, Jackson and Pool 1994 (see Appendices I.9.1 and I.9.3)
Rates: Database C (see Appendices I.9.2 and I.9.3)

Figure 11.3.4 shows the extent to which ethnic differences in the timing of family formation correlate with ethnic differences in female labour force participation, and in employment within the labour force. Unfortunately, the labour force/employment data are not available by single year of age, and there is thus some loss of refinement when the corresponding age at peak childbearing is given by five-year cohort, not least that the recent (and small) increase in age at peak childbearing for Maori females is dampened down. This shortcoming acknowledged, the relationship between age at peak childbearing and labour force participation shows a very strong positive correlation (r=0.97) for non-Maori cohorts born 1952-1966—up to and over the peak of the baby boom—but very slight negative correlation (r=-0.16) for Maori. That is to say, whilst labour force participation improved for females of both groups over most of the period, its increase saw a concomitant increase in peak age at childbearing for non-Maori, and/or vice versa, but not for Maori, at least over most of the period. Data for the cohort born 1967-1971 are shown separately, due to their slightly inconsistent ethnic classification, but were they to be added, the correlation would change very little (non-Maori, r=0.97; Maori, r=-0.07), albeit giving a little more weight to the recent upward shift in age at peak childbearing for Maori.

Figure 11.3.4
Family Formation and Employment: Age at which Peak Age-Specific Fertility Ratio/Rate has Occurred for Cohorts Born 1927-1971, Labour Force Participation and Employment Rates of Cohorts when Aged 20-24 Years, by Ethnic Classification, Females



Notes: *1951-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group
Non-Maori = Total minus specified Maori classification
Source: Appendix I.10

In terms of the Easterlin hypothesis, however, the key variable is employment *within* the labour force, and it would seem that at least some of the above disparity lies

in the difference between this index and the labour force participation rate.[6] Unfortunately, as Figure 11.3.4 shows, data limitations prevent little more than a rudimentary analysis. Nevertheless, those data that are available—albeit these being for the more recent period, during which time Maori age at peak childbearing showed its upward shift—show that for cohorts of both ethnic groups born 1952-1966, the relationship between employment within the labour force and timing of childbearing is strongly negative for both groups (non-Maori r=-0.87; Maori r=-0.88). That is to say, age at peak childbearing increases as the employment rate falls (i.e. as the *un*employment rate increases), thus supporting the classic Easterlin hypothesis. At least for the Maori Ethnic Group, this finding is further strongly supported by recourse to period data for 1991, which identify an age at peak childbearing of 25 years (see Appendix I.9.2).

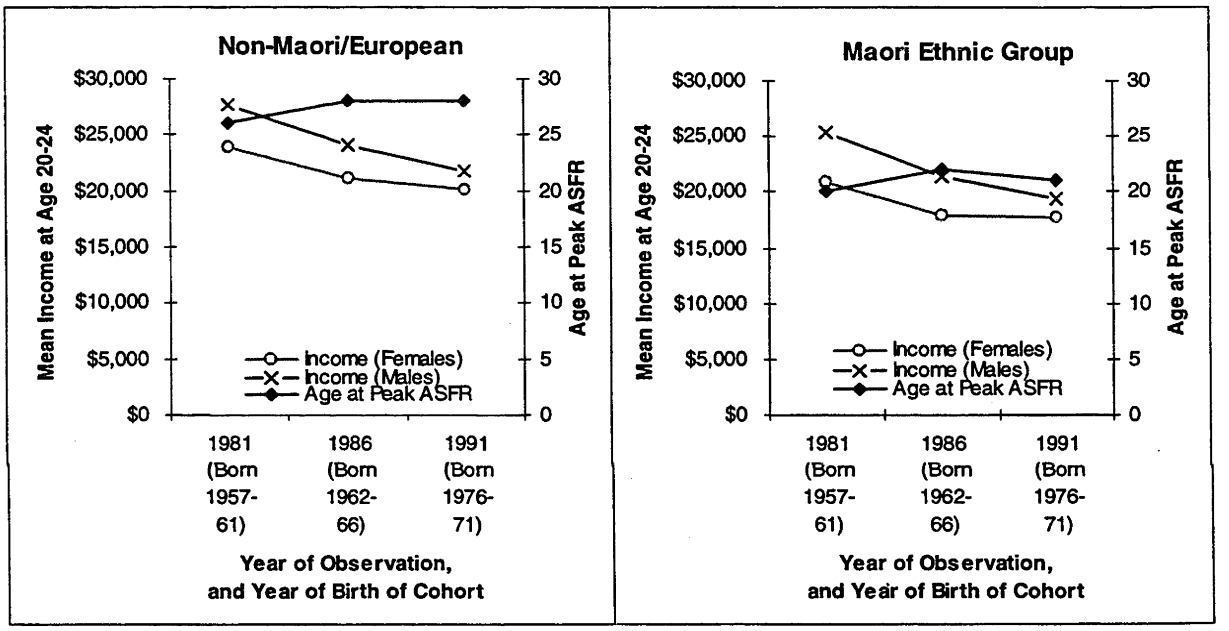
Despite the latter, however, the aggregated fertility data show an increase in the gap in age at peak childbearing between the two populations—that is, the recent upward shift for Maori, which appears to correspond with a decline in proportions employed, is largely concealed. Since this shortcoming would undoubtedly bias the extent to which the data would be likely to support or refute the expanded hypothesis, the latter analysis is not attempted here. Suffice it to say that under the hypothesis, the decline in the relative proportions employed of Maori to European females shown above in Figures 11.2.4 and 11.2.6, and the recent reduction in the gap in the age at peak childbearing, are suggestive of a positive correlation: as the ratio of Maori to European females in employment falls, the gap in age at childbearing between Maori and non-Maori falls.

Finally, Figure 11.3.5 shows the relationship between ethnic differences in the timing of family formation and the ratio of Maori to European mean income for both males and females when cohorts were aged 20-24 years. Again because of data limitations, only the 1981-1991 period can be reviewed. Furthermore, the analysis compares income data for the European and Maori Ethnic Group populations, against fertility data for the non-Maori and Maori Ethnic Group populations. The discrepancy is not a substantial shortcoming, as the mean incomes of European and non-Maori are almost identical. Nevertheless, the limitation should be kept in mind. In addition, it is centrally acknowledged that the analysis treats the two ethnic groups as 'closed'

[6] It is acknowledged that factors occurring *within* the labour force do not pertain to all women, whilst the potential for childbearing does, but neither can an employment to population ratio account for differences between the unemployed and those who choose to remain outside the labour force. Both measures are in fact used, see below.

populations, when in fact persons of each group often inter-marry or cohabit. In Chapter 4, for example, it was shown that in approximately half of all families in which one partner claims Maori ethnicity, the other partner claims European ethnicity, and this proportion was ostensibly higher amongst the younger population. Thus whilst the following analysis considers each group separately, this very important shortcoming should be kept in mind.

Figure 11.3.5
Family Formation and Income: Age at which Peak Age-Specific Fertility Rate has Occurred for Cohorts Born 1957-1971, and Mean Income of Cohorts in Full-Time Employment when Cohort Aged 20-24 Years, by Sex and Ethnic Classification



Notes: Income = Maori Ethnic Group and European;
Fertility = Maori Ethnic Group and Non-Maori
Source: Appendix I.11

For the three observational points and cohorts for whom data can be examined, age at peak childbearing increased as the mean income of 20-24 year olds declined, for both sexes and both ethnic groups, thus supporting the classic Easterlin hypothesis. The same therefore holds true for inter-ethnic relationships—at least at this level of aggregation: age at childbearing increased for all women; mean income declined for all persons of both sexes. If the analysis had been based on total income (all income groups combined), the finding would also have held true for all but Maori females, for whom total income increased over the period. Nevertheless, because Maori age at peak

childbearing increased as male incomes of both ethnic groups fell, it will be argued that the data still essentially support the hypothesis.

Because of the confounding effect of the limitations imposed by the use of aggregate data, the expanded hypothesis is not investigated. Under its tenets, however, it could be surmised that the recent decline in the ethnic gap in age at peak childbearing could be associated with the fall in the income relativity of Maori to European identified in Figures 11.2.7-11.2.9, and thus that future research with single year of age data would be pertinent.

11.4 SUMMARY

This chapter undertook a limited and somewhat modified exploration of the Easterlin hypothesis in a New Zealand setting, applying it to data for the total, Maori and non-Maori/European populations. Where the original tenets of the hypothesis held that—since the 1940s—large cohorts would (a) experience greater competition than small cohorts for resources, such as jobs and income, and as a result would have lower relative employment and mean income, causing them to (b) delay their childbearing; the modifications tested (i) whether the same principles would hold at the level of the ethnic group, that is, *within* the group, and (ii) whether they would hold *between* ethnic groups. The former (i) was examined under the auspices of the 'classic' hypothesis, at both total population and ethnic group level; the latter (ii) under the auspices of an 'expanded' hypothesis, the key question being whether an increase in the proportion of Maori in each total cohort resulted in an increase in ethnic inequality.

Importantly, the analysis focused directly on the experience of 20-24 year olds, instead of the relative experience of 15-29 *vis-à-vis* 30-54 year olds, as employed by Easterlin for much of his original exposition of the argument; it employed longitudinal cohort analysis, where Easterlin's analysis did not follow cohorts over the life cycle; and it paid special attention to the experience of females, data for whom were examined only superficially by Easterlin. However, also importantly, data limitations restricted the analysis by ethnicity to a very brief period, insufficient to explore an argument that requires a much longer view.

Overall, and within the limitations imposed by the data, the findings gave considerable—though by no means unqualified—support to both the classic and expanded hypotheses, resulting in a general finding of neither total acceptance nor total

rejection of either. Supporting the premises, both the proportions employed (whether within the labour force or as a ratio of employment to population) and mean income tended to fall as absolute cohort size increased (with some important differences for females, noted below), as did ethnic relativity in the proportions employed and mean income fall as the proportion of Maori in each cohort increased (again with differences by sex). So too did the timing of childbearing increase as the proportion of both sexes employed, and the mean income of males, declined, at both population and ethnic group level.

However, contradicting the classic hypothesis was the fact that both the proportions employed and mean income continued to fall during the 1986-1991 period, when cohort size had also begun to decline. Furthermore, where data were available for the total population for a longer period, it was also shown that there were periods where both proportions employed and cohort size, and mean income and cohort size, increased or declined in unison. It was proposed that the former (a concomitant increase) may reflect a threshold effect, whereby proportions employed or mean income does not begin to decline until a certain cohort size, or level of saturation, is reached. Similarly, the latter (a concomitant decline) may reflect a lag effect, whereby cohorts born immediately after the peak of the baby boom continue to experience the saturation effects caused by the large cohorts that preceded them. Both possibilities are plausible and cannot be dismissed. Certainly the proposals will be testable as future data come to hand.

Nevertheless, there was also sufficient evidence to suggest that factors external to the cohort have been significantly involved in the general increase in inequality experienced by the younger and largest cohorts. Primarily, this information came from examination of cohort experience across the life cycle. If cohort size was the only factor involved, it would be expected that large or small cohorts would experience the effects consistently across time. As it turned out, period factors appeared to have had the greater influence at certain times, at least in terms of employment. For example, almost all male cohorts experienced a small absolute improvement in the proportion in employment within the labour force across the age span corresponding to the 1981-1986 period, followed by a substantial decline across the age span corresponding to the 1986-1991 period, each of which was more marked for Maori than European. These trends were mirrored by a relative improvement in the ratio of Maori to European in employment within the labour force across the age span corresponding to the 1981-1986 period, followed by an equally consistent decline in ethnic relativity across the age span

corresponding to the 1986-1991 period. Similar phenomena occurred for females across the 1976-1981 and 1981-1991 periods (i.e. the former showing an improving employment situation, the latter, a deterioration). That said, there is no doubt that the greatest effects of the relative deterioration between Maori and European in employment have been experienced by the younger cohorts, with their increased size and larger proportions of Maori, and thus generally support both classic and expanded variants of the hypothesis.

The situation for females requires separate comment, in that the variables employed by Easterlin (employment within the labour force; full-time income) are not necessarily the most valid for examining the experience of females. For example, although the employment of 20-24 year old females *within* the labour force was shown here to have declined steadily during the 1976-1991 period, the employment to population ratio showed a steady increase until 1986, falling only during the 1986-1991 period. These trends occurred for females of both ethnic groups. Given that trends within the labour force are for females affected by more complex factors than for males, such as family size and fertility control, it would seem that the employment to population index is the more useful for examining the experience of females. Indeed this may equally well be the more valid indicator for males also. It is, however, seriously affected by the proportion of the cohort undertaking tertiary education, and thus to be really meaningful would require standardisation and/or decomposition to control for or separate out these factors.

Similarly questionable as an indicator for females is relativities in mean full-time income between younger and older persons, shown in this chapter to have increased as cohort size increased, thereby offering an outright rejection of the classic hypothesis. (In this chapter, the incomes of 20-24 year old females were compared with those of older males. Importantly, Martin (1997a) indicates that the same finding would have occurred if the index had been the relative mean income of younger to older females.) Rejection of the hypothesis would therefore extend to the relationship between female incomes and changes in the timing of family formation. However, it was also noted that whilst female mean incomes have indeed improved *vis-à-vis* males (as shown in Chapter 10), the relative improvement is in large part a function of the falling incomes and employment experience of males. Since family formation and family incomes are (usually) a joint exercise, it was proposed that the findings essentially support the classic hypothesis. That is to say, as the employment and income situation of males deteriorates,

childbearing is delayed. Whether it is delayed because female partners attempt to increase their employment and mean income in order to make up the shortfall, or, by delaying childbearing, female employment and mean incomes increase—an age-old question—requires a more sophisticated analysis than undertaken either here or by Easterlin. However, the recent decline in both female employment and incomes, against the continuing increase in the peak age at childbearing—especially for the cohorts born around and just beyond the peak of the baby boom, and for both Maori and European/non-Maori alike—strongly suggests the former. Either way, an answer should be forthcoming as future data become available.

The findings have at least four contradictory implications. (1) Under the classic hypothesis, those pertaining to employment and income *per se* suggest that both the current level of socio-economic inequality between younger Maori and European, and its recently increasing trend, may begin to subside in the near future, as cohort size continues to decline. This will occur if a 'lag effect' is currently operating. (2) By contrast, under the expanded hypothesis, where Maori comprise an increasingly larger proportion of each cohort, a trend that will continue for many years yet, the findings suggest—*ceterus paribus*—increasing levels of inequality between younger Maori and non-Maori/European. (3) If, on the other hand, the recent trends are either independent of, or additional to, cohort size—that is to say, if, as seems likely, they also reflect period effects—then future trends will also be dependent upon these factors. (4) Lastly, if the timing of childbearing increases because individuals perceive themselves as unable to afford a family at younger ages, there are implications for conventional understandings of demographic change. In Chapter 6, it was suggested that the relatively early (European) childbearing of the baby boom, and the sustained high fertility for Maori over the same period, may have reflected a period of improving material well-being for both ethnic groups. By contrast, the findings for recent years imply the opposite, that increasing age at childbearing (and implicitly, decreasing family size) reflects a deteriorating socio-economic situation—whether or not this is caused by cohort size—and, as Easterlin argued, an effort by couples to address that situation by altering their fertility strategy. Accordingly, there is a strong suggestion that 'second demographic transition' understandings that age at childbearing increases and family size declines as material well-being increases, may need to be re-considered.

PART 3

SUMMARY AND IMPLICATIONS

12

SUMMING UP: ETHNIC STRATIFICATION FROM A TOTAL SOCIAL PRODUCTION PERSPECTIVE

There are no laws of behaviour which are not descriptions of the arrow of time (Wallerstein 1992:6).

The total social production approach to ethnic stratification has illustrated a number of areas in which the pursuit of subsistence (production) and the replacement of the species (reproduction) interact. However, because these arguments and findings have been developed over eleven chapters, it is useful to begin this summation with a review of the main points of each.

The thesis began with the argument that since populations must both produce and reproduce in order to survive, studies of ethnic stratification that consider only the productive dimension fail to come to grips with the complexities of human existence. As a result, such studies have limited use for those who might attempt to address the situation, and/or to consider the extent to which a given period factor (for example, an historical event, a change in an opportunity structure, or a policy) may interact with demographic factors to further exacerbate ethnic inequality. An alternative 'total social production' perspective (Cordell et al.1994:23-24), which holds that the pursuit of subsistence (production) and the reproduction of the species (reproduction) are fundamentally interdependent, was proposed.

Contrary to 'melting pot' assumptions about eventual assimilation or integration between previously colonised indigenous groups and their colonisers, a review of the stratification literature in Chapter 2 found strong support for the neo-Weberian argument that socio-economic differences between such populations are likely to be self-sustaining over the longer term, and to engender increasingly reactive responses from the subordinate population. In particular, Michel Hechter's (1975) theory of internal colonialism (already substantiated in the New Zealand setting by Pearson and Thorns 1983; Pearson 1988, although supported across time with minimal empirical data), with

its central concept of a cultural division of labour, was seen as a useful framework through which to examine recently increasing tensions between Maori and European.

Under the auspices of total social production, Chapter 3 developed the argument that if demographic factors such as age structure, cohort size, and the timing of family formation have the potential to become independent variables of inequality (Easterlin 1987a), then ethnic differences in these factors are similarly likely to do so, and vice versa. The argument was supported with a review of both conventional and 'revisionist' understandings of demographic change, and of the associated development of ethnic demographic differentials.

In Chapter 4, a methodology was developed which sought to examine demographic differences between Maori and European as both dependent and independent variables of socio-economic inequality, in the context of a society initially established on the basis of colonisation. This task simultaneously demanded the availability of an empirical profile of ethnic stratification across a broad range of socio-economic indicators, and the expansion of the so-termed 'Easterlin hypothesis' for application at the level of the ethnic group.

A review of the data sources available for the thesis, the topic of Chapter 5, revealed a major problem with data discontinuities and deficits, uppermost amongst which were the inter-related issues of ethnic classification and inter-ethnic marriage/partnering, and a lack of consistent or appropriate data for much of the historical period. These limitations necessitated a secondary focus on the development and explication of the thesis database.

The first substantive chapter, Chapter 6, explored the historical development of socio-economic and demographic differentials between Maori and European. Substantial support was found for the argument that the material well-being and the age structure of each population has been largely interlocked with the other. During the nineteenth century, the underlying dynamics reflected the infliction on Maori of disease and war, and the associated appropriation by European of Maori land and resources. In the twentieth century they reflected the incremental—although highly paternalistic—extension to Maori of the welfare-related benefits derived from these resources. Prior to the 1940s, the interaction of these dynamics with, ostensibly, cultural mores, caused the age structures of the two populations to diverge. Thereafter they began to converge, at first because the European baby boom caused the European population to become structurally younger, like that of Maori, but later (from the early 1960s) because the

fertility of both populations fell in tandem, albeit at differing rates, causing both to become structurally older. A suggestion also emerged that the sustained high Maori fertility of the 1940s and 1950s may have reflected a perception of improving material well-being, *vis-à-vis* European. In combination with the falling infant mortality of the era, which reflected the earlier delay for Maori in gaining access to its determinants, the two factors are reflected in the current relatively youthful age structure of Maori.

With the addition of some important caveats, ethnic differentials as measured by crude indices of dissimilarity between Maori and European/non-Maori were found in Chapters 7-10 to have undergone an overall increase in three key socio-economic indicators, and to have decreased in three others. Those showing overall increases were labour force status, employment status, and qualifications; those showing overall decreases were industrial distribution, occupational distribution, and mean total income. Within these overall trends, however, the indices for qualifications showed slight decreases (improvements) in ethnic inequality between 1986 and 1991, whilst those for mean total income showed small increases (deterioration) in ethnic inequality during the same period. Importantly also, whilst the indices for industrial and occupational status showed overall trends towards greater equality, trends between 1976 and 1991 reflected the disproportionate removal of many Maori from the analysis, as a result of their disproportionately low level of employment over that period. Taken together, there was a strong suggestion that the situation of Maori *vis-à-vis* European/non-Maori has either deteriorated in recent years, or has not improved substantially since the 1970s.

Ethnic differences in age structure played a complex role in producing these crude differentials at each observation, in some cases adding to ethnic inequality, and in others, reducing it. However, because the effects for each indicator were often mutually compensating between categories, and because the indices of dissimilarity were unweighted by the size of each category, age-standardisation of the indices of dissimilarity for each indicator could give little more than an approximation of the overall role of age structure. These findings indicated that:

> the Maori male age structure was on the one hand disadvantageous to both *labour force status* and *employment status* for Maori males at all observations, and on the other, provided a small degree of protection against the intercensal increase in inequality in each of these indicators between 1976 and 1986. By 1991, however, the Maori male age structure also contributed to the increase in inequality. (That is to say, if the Maori and European age structures had been the same, the indices of dissimilarity would have been slightly lower, whilst the

increase in inequality between 1976 and 1986 would have been slightly greater, and between 1986 and 1991, slightly less.);

the Maori female age structure was advantageous to Maori female *labour force status* between 1976 and 1986, and in 1991, disadvantageous, but contributed to the intercensal increase in inequality at all observations. (That is to say, if the Maori and European age structures had been the same, the index of dissimilarity between 1976 and 1986 would have been slightly greater, and in 1991, slightly lower, whilst the overall increase in inequality would have been slightly less.);

the Maori female age structure was disadvantageous to Maori female *employment status* at all observations, and contributed to the intercensal increase in inequality at almost all observations. (That is to say, if the Maori and European age structures had been the same, the index of dissimilarity would have been slightly lower, and the increase in inequality, slightly less.);

the Maori male age structure was advantageous to the Maori male *industrial distribution* at all observations, and contributed to the intercensal decrease in inequality at all observations. (That is to say, if the Maori and European age structures had been the same, the index of dissimilarity would have been slightly greater, and the decrease in inequality, slightly less.);

the Maori female age structure was on the one hand disadvantageous to the Maori female *industrial distribution* between 1976 and 1986, and then advantageous, and on the other, contributed to the intercensal decrease in inequality at all observations. (That is to say, if the Maori and European age structures had been the same, the index of dissimilarity between 1976 and 1986 would have been slightly lower, and in 1991, slightly greater, whilst the decrease in inequality would have been slightly less.);

the Maori male age structure was disadvantageous to the Maori male *occupational distribution* at all observations, and played essentially no role in producing the intercensal decrease in inequality at any observation. (That is to say, if the Maori and European age structures had been the same, the index of dissimilarity would have been slightly lower, whilst the decrease in inequality would have been the same.);

the Maori female age structure was advantageous to the Maori female *occupational distribution* at all observations, but played essentially no role in producing the intercensal decrease in inequality at any observation. (That is to say, if the Maori and European age structures had been the same, the index of dissimilarity would have been slightly greater, whilst the decrease in inequality would have been the same.);

the Maori age structure was on the one hand advantageous to the Maori *qualification distribution* at all observations and for both sexes, but on the other, contributed to the small intercensal increase in inequality between 1981 and 1986. It then contributed to the small decline in inequality between 1986 and 1991. (That is to say, if the Maori and European age structures had been the same, the indices of dissimilarity would have been somewhat greater at all observations, whilst both the increase in inequality between 1981 and 1986, and

the decrease in inequality between 1986 and 1991, would have been slightly less.);

the Maori age structure was disadvantageous to Maori *total mean income* at all observations for both sexes, but made a very small contribution to the intercensal decrease in inequality between 1981 and 1986. It did not contribute to the intercensal increase in inequality between 1986 and 1991. (That is to say, if the Maori and European age structures had been the same, the indices of dissimilarity would have been slightly greater at all observations, whilst the decrease in inequality between 1981 and 1986 would have been slightly less, and the increase in inequality between 1986 and 1991, the same.) Instead, the primary factor driving the increase in income inequality between 1986 and 1991 was ethnic differences in labour force status.

Indeed, the contribution made to equality or inequality by age structure at each observation and across time for each indicator was relatively small, whilst that due to underlying or unexplained factors (and, in the case of total mean income, to labour force status and qualifications) was somewhat larger. This interpretation was supported by the various cohort analyses, which showed that trends were, on the one hand, generally positively related to year of birth: the more recently born the cohort (i.e. the higher the birth year), the greater the inequality or equality when at the same age as the predecessor cohort; but, on the other hand, highly period-specific, in that inequality increased across some periods, and decreased across others, similarly for almost all cohorts, irrespective of the age-span that the period pertained to. The significant periodicity evidenced by these findings suggested that the negative trends were largely caused by period factors, such as economic restructuring, changes in the opportunity structure, and changes in wage and income support policies, that had disproportionately disadvantaged Maori, and not by factors endogenous to any specific cohort or ethnic group, such as an increase in a 'culture of dependency'. Similarly, the positive trends suggested period changes in these factors that disproportionately advantaged Maori. For females, cohort analysis also showed ethnic inequality to be especially high over the key childbearing and childrearing years.

Finally, Chapter 11 found considerable—although by no means unqualified—support for both the classic Easterlin hypothesis and its expanded version. Supporting the classic hypothesis, both employment and full-time earnings were shown to have fallen as cohort size increased; and, as employment and earnings fell, age at peak childbearing increased. The findings applied to both ethnic groups, suggesting that (a) cohort size is a cause of inequality and that (b) conventional 'second demographic

transition' understandings that age at childbearing increases and family size decreases as material well-being increases, may need to be re-evaluated. Contradicting the hypothesis, however, were the findings that employment and earnings continued to fall as cohort size passed its peak, suggesting the presence of lag effects (whereby immediately post-peak cohorts have continued to experience the 'saturation' effects caused by the large cohorts that preceded them); and that the trends in the employment and earnings experience of each cohort showed significant periodicity, suggesting, as in Chapters 7-10, the primacy of factors exogenous to the cohort.

Under the expanded version of the hypothesis, the employment and earnings experience of Maori *vis-à-vis* European deteriorated, and Maori age at peak childbearing increased, as the proportion of Maori in each total cohort increased. The findings indicated that (a) an increase in intra-cohort competition from Maori generated an increase in socio-economic inequality, and that (b) the increase in socio-economic inequality generated a small increase in age at childbearing for Maori, and thus a small move towards convergence in the childbearing patterns of Maori and non-Maori. As with the findings under the classic hypothesis, however, a substantial degree of universality and periodicity was revealed by cohort analysis, suggesting that factors exogenous to the cohort were also involved.

12.1 SYNTHESIS OF KEY ARGUMENTS

The central questions of the thesis were whether or not trends in ethnic differentials for economic production and demographic reproduction have tended towards convergence or divergence over the long term, whether or not these trends appear to be linked, both within and between ethnic groups, and whether or not demographic reproduction has played a role in the maintenance of ethnic stratification.

As regards the question of whether or not trends in economic production have tended towards convergence or divergence, it is clear that the recent deterioration in the age-standardised indices of dissimilarity for labour force status, employment status, and income run counter to what might have been expected. Importantly, however, these trends also run counter to those that obtained between the 1950s and the late 1960s-1980s (depending on the indicator), during which time ethnic inequality on these counts decreased. Together they suggest that a cultural division of labour as articulated by Hechter (1975), Pearson and Thorns (1983) and Pearson (1988) does indeed operate in

New Zealand, but that its grip lessened substantially over the period of the post-war economic boom. The claim is reinforced, paradoxically, by the recent improvements in the indices of dissimilarity for industry and occupation, which are in all probability reflections of the disproportionate decrease in Maori employment, and not real improvements at all; and by the fact that the general improvements in *all* of these indicators between the 1950s and the 1970s coincided with the extremely rapid urbanisation of Maori. At least some of the improvements will have been a function of this mass urbanisation (a proposition noted by Easton 1983:211), itself largely a response to the full employment of the period, and not of improvements in equality *per se*. The claim is also reinforced by the finding that the recent increase in inequality in labour force status has occurred despite a recent, relative increase in qualifications for Maori, thereby extending to 1991 similar arguments by Wilson (1979) and Messina et al. (1992).

As regards the question of whether or not trends in demographic reproduction have tended towards convergence or divergence, it will be recalled that the finding for age structure was for divergence prior to the 1940s, and for convergence since (at first because of the European baby boom, and later because of falling fertility for both groups); and the finding for the timing of family formation was for divergence between the late 1940s and late 1970s-early 1980s (primarily because the age at peak fertility became younger for Maori than for European), and for a very slow if somewhat erratic convergence since.

When considered in the light of trends in the productive dimension (which begins to address the question of whether or not trends in the two dimensions are linked), these findings appear somewhat contradictory. Dominant demographic understandings would hold that the sustained high fertility of Maori over the 1950s reflected little change in the productive dimension, when in fact there was a sizeable improvement in labour force status and income; and that the 1960s fall in (Maori) fertility and the 1980s onset of an increase in the timing of (Maori) family formation reflected an increasing improvement in the productive dimension for Maori, which was ostensibly true at the beginning of the period, but not towards the end. Although it would require micro-level research to explore these dynamics further, it is possible that the contradictions may be at least in part explained by the Easterlin hypothesis, which holds that, contrary to conventional demographic understandings (which are based largely on the employment and earnings experience of females only), fertility increases when times are good, and falls when times

are bad, particularly when these phenomena affect *males*. Under this proposition, it is plausible that the fertility of both Maori and European was high over the 1940s and 1950s because, for both populations (and for males and females alike), there was a general improvement in the productive dimension. The lack of data by age over the 1960s make it impractical to comment further on possible productive-reproductive relationships over that period, but it is clear that when the employment and earnings experience of the young males of both populations began to seriously deteriorate in the early 1980s, Maori began to delay the timing of family formation, as their European counterparts had done a decade earlier. These speculations do not, of course, explain why European began to delay their childbearing earlier than Maori, nor why the fertility of both Maori and European declined simultaneously in 1961, when the material wellbeing of both populations was ostensibly relatively high. However (and remembering that extensive inter-ethnic partnering reduces the validity of some of these findings), they suggest avenues for future research. It may be, for example, that the fertility of each ethnic group simultaneously declined and/or was delayed at different points for different reasons, such as differing ethnic experience of the massive social change associated with women's liberation during the 1960s and since.

One potential reason, which was not able to be conclusively determined in this thesis, was the extent to which these patterns and trends may have reflected incremental increases in cohort size, and thus in inter-ethnic competition, driven by both the European baby boom, and an increase in the proportion of Maori within each successive cohort. On the one hand, the increases in employment and earnings inequality, which were especially pronounced for the most recently born cohorts, suggested that cohort size has, at the very least, increased competition between young Maori and European, the largest cohorts of both populations arriving at the door of the labour market just as economic restructuring began. On the other hand, the universality and periodicity of the trends suggested that period factors, rather than cohort size, had primacy. That is to say, if the increases in ethnic inequality were solely a function of increasing cohort size, the general direction of both intra- and inter-cohort trends would have been expected to remain fairly consistent across time, and not to show the significant temporal reversals that they did.

Nevertheless, the question of whether or not demographic reproduction has played a role in the maintenance of ethnic stratification must be generally answered in the affirmative: ethnic differences in age structure contributed to ethnic stratification at

almost all observations. However, the findings require a qualification to be added to the hypothesis, namely, that demographic reproduction both contributed to *and ameliorated* ethnic stratification, depending upon the category or indicator under investigation. This is not to say that demographic factors were by any means the key contributors to, or ameliorators of, ethnic stratification, either at each observation or across time, as this was patently not so, but rather, that these complex interactions have implications that demand more consideration by policy makers and analysts of ethnic stratification than is currently the case. Three examples, one pertaining to labour force status and its associated employment status categories, one to qualifications, and one to income, will illustrate.

12.1.1 Age Structure and Ethnic Differentials in Labour Force and Employment Status:

Reflecting a generally well understood—if seldom quantitatively demonstrated feature of ethnic inequality in New Zealand—the youthful age structure of the Maori population was found to account for a sizeable proportion of the crude (observed) unemployment differential at each observation—in 1991, 17 per cent of that for males, and 25 per cent of that for females. Any policy pertaining to unemployment in 1991, such as the raising of the age of eligibility for the adult rate of unemployment benefit from 20 to 25 years, will therefore have had what will be termed here an *age-neutral*, and an *age-discriminatory*, effect. The age-neutral effect will have pertained to the total proportion of Maori who were unemployed *less* the proportion of the crude differential that was accounted for by age structure; the age-discriminatory effect, to the proportion of the crude unemployment differential that was accounted for by age structure. In practice, the proportion involved was generally not large, in 1991 accounting for 1.6 per cent each of all Maori males and females aged 15-64 years. However, and although the effect had declined across the period in relative terms (that is, in terms of the proportion of the crude differential accounted for by age structure at each observation), it had increased in absolute terms (that is, in terms of the proportion of the Maori population exposed to any potential age-discriminatory effect).

Importantly, it is not that such policies (or their indirect effects) disproportionately advantage or disadvantage the *individuals* within these categories. Individuals are, of course, affected by such policies, but the effect on each individual

(within each category) is essentially the same. The distinction is critical because, as argued in the introductory chapters, the age-effect is typically presented as a methodological problem that affects comparison, and not as having effect in and of itself. Also importantly, the term 'age-discriminatory' should not be taken as implying that any effect will necessarily be negative. Had the above policy, for example, *raised* the youth rate of unemployment benefit, it would have disproportionately advantaged the Maori population through the same age-effect. The point is that the *potential* of policy to advantage *or* disadvantage one or another population through an age-effect needs to be understood, as does the fact that this effect differs to that which is experienced by individuals.

In this regard, the complex sex-, period-, and category-specific nature of the age-effect revealed by the findings of the thesis provides a basis both for understanding some of the dynamics of past and present inequalities, and for indicating where future inequalities could occur. In 1991, for example, the Maori age structure gave no employment-related advantage to Maori (with the exception of a minute effect for the small proportion of Maori males who worked part-time). Instead, the European age structure conferred a small advantage on both European males and females in full-time employment, and on European females in part-time employment. Similarly, the European age structure conferred a small advantage on European female wage and salary earners, and on European of both sexes in the 'own account' and 'employer' categories. In some cases these age-effects had declined over time, in some, increased, and in yet others, had shifted from a Maori to a European advantage. In all cases, however, the age-effects in 1991 added to the underlying/unexplained advantage for European in these categories (which, with one exception—that of male employers—had increased over time). Policies that in 1991 had an impact in these categories, whether directly or indirectly, would therefore have had a small age-discriminatory effect for European, which in some cases may have been advantageous, and in others, disadvantageous. The effect would have been *additional* to any advantageous or disadvantageous effect also accruing to European as a result of their higher unexplained proportions in these categories.

By contrast, for females at all observations, the European age structure predisposed European females to being in the 'not in the labour force' category, whilst it was Maori females who actually experienced the greater (underlying) proportions. Prior to 1991, a similar situation had occurred for females who were employed full-time, only

in this case it was the Maori age structure adding to the presence of Maori females in the category, but European females experiencing the greater (underlying) proportions. In each case the age-effects in these categories offset (reduced) the underlying differentials at each observation. Any policy that had an impact in either labour force category would therefore have had an age-neutral effect for the population experiencing the unexplained differential, and an age-discriminatory effect for the population experiencing the component due to age structure.

Important also was the finding that the various contributions made by age structure within each category (relative to the observed difference) tended to fluctuate across the period. Because age structure itself does not fluctuate in this manner, the 'trends' must be understood as reflecting at least two factors. First, when considered as a proportion of either the observed or underlying/unexplained differential (therefore in relative terms), they may reflect fluctuations in these base-lines. A decline in the relative age effect in a given category may be a function of an increase in the observed differential, and vice versa. Second, they suggest fluctuations in supply (perhaps of certain skills) and demand (perhaps in job-creation and training schemes), that at times favoured younger persons, and at times favoured older. In 1986, for example, the crude difference between the proportions of Maori and European males who were unemployed was lower than in either 1981 or 1991, but age structure had its largest relative effect, implying that the employment and/or job creation and training schemes of the time had advantaged older European males (thereby removing them from the unemployment category, and increasing the age effect for Maori). Thus, as implied earlier, it is misleading to attach too much importance to 'trends' in the relative age-effect. Instead, policy-makers (and analysts of ethnic stratification) need to assess the contribution to the crude differential for each category made by each individual age-effect, and to develop or assess the potential impact of policies accordingly.

12.1.2 Age Structure and Ethnic Differentials in Qualifications:

However, to complicate matters slightly, trends in the age-effect have considerable significance when they pertain to ethnic differentials in qualifications. The explanation for this contradiction is that qualification categories (which reflect the highest qualification held) are essentially unilineal in order—people cannot move from higher categories back into lower ones, whereas in the case of labour force status and/or employment status, people can move between statuses. (These comments ignore the

possible effects caused by migration.) As a result, the age effect within each qualification category tends to reflect age differences *per se* between the two populations, and to provide an indication of future effects.

For example, for both males and females for whom a secondary school qualification was the highest qualification, the age-effect, which favoured Maori at each observation, reduced over time. For males with either an 'other tertiary' or a 'bachelors/post-graduate' qualification, the age-effect, which favoured European at all observations, also reduced over time. For females with these higher qualifications, however, the age-effect, which favoured Maori at all observations, increased over time. Because we know that (a) the Maori female age structure is slightly older than that of Maori males, but slightly younger than that of European females, and that (b) the Maori male age structure is slowly maturing, the findings suggest that (c) the Maori female age structure is currently a little more optimal for the gaining of higher qualifications than either the European female or the Maori male age structures, and that (d) this situation is therefore likely to occur for Maori males in the near future. That is to say, Maori males should shortly make some small gains in the higher qualification categories over and above any 'real' gains.

The proposition is supported by the declining advantage from age structure for European males in these categories (in 1991 the age-effect had fallen to zero in the 'bachelors/post-graduate' category), and by the similarly declining age-advantage for Maori of both sexes with a 'secondary school' qualification. In both cases, the trends in the age-effect would appear to reflect the slowly converging age structures of the two populations. As implied earlier, age-standardised indices of dissimilarity conflate the various age-effects that obtain in each individual qualification category. Nevertheless, they too provided substantial evidence that the small declines in ethnic inequality between 1986 and 1991 were due to the age structure of the Maori population, which, in relation to the gaining of qualifications, was relatively advantageous.

However, these positive and potentially positive effects of the Maori age structure on the crude ethnic differentials for qualifications must not be confused with the reality of substantially higher unexplained differentials favouring European of both sexes in all but the essentially negative 'still at school/no qualifications' category, nor with the fact that the unexplained differentials in the arguably important 'bachelors/post-graduate' category increased for both sexes. The findings point to the imperative of not only remaining vigilant about equality of access to higher qualifications for Maori

individuals, but of taking action to ensure that the recent shift to 'user pays' tertiary education will not unduly disadvantage the Maori population at the group level, which, as argued, is nearing the optimal age structure for the gaining of such qualifications.

Indeed, in 1991, 37.5 per cent of the Maori population were aged less than 15 years, incrementally approaching the age of tertiary education, against 21 per cent of the non-Maori/European population. Given the shift to user pays tertiary education, this substantial demographic differential contains significant potential for an increase in ethnic inequality in qualifications. One way of addressing this issue may be to provide a number of special scholarships for Maori, equal in number to the age-discriminatory effect. For example, if the age discriminatory effect for those enrolled at a tertiary institution (not investigated here) was equivalent to 4 percentage points (as it is currently for those with a secondary school qualification), a number of scholarships reflecting this proportion could be provided, in order to equalise the potential access of each population. This is a very different proposition to the idea that *all* Maori should be treated differently, perhaps by reducing fees for Maori students, which would be inequitable at the level of the individual.

12.1.3 Age Structure and Ethnic Differentials in Mean Income:

Although ethnic differences in age structure contributed to crude ethnic differentials in mean total income at all observations, they did not cause the recent (1986-1991) increase in inequality in this indicator, for either sex. Instead, the key factor driving the increase was labour force status, with qualifications playing a secondary role. The finding, which supports Easton's (1996b:120) suggestion that the increase was more likely to be an employment-effect than an age-effect, is returned to in the following section.

Similar findings obtained for those of both sexes in either full- or part-time employment, with the caveat that the increase in income inequality (which for those in full-time employment occurred steadily across the entire 1981-1991 period, and for those in part-time employment occurred between 1986 and 1991) in these categories was primarily a qualification-effect than an age-effect. Indeed, in the case of both males and females employed full-time, and of females employed part-time, the Maori age structure played a small role in protecting *against* the increase in income inequality. That is to say, whilst Maori-European income relativities would have been slightly greater (more equal) if the age structures of the two populations had been the same, the

increases in inequality would also have been slightly greater: in no case would Maori have been protected against the declines in income relativity by having the same age structure as European. The findings are important because the age-effect, and thus its protective role, had fallen to near-negligible in 1991.

The Maori age structure (and by proxy, other demographic differences between Maori and European, such as family type and size) also played a small role in producing an improvement in income equality for those of both sexes who were either unemployed or not in the labour force between 1981 and 1986, and a small role in protecting against a relative deterioration in income for Maori in these categories between 1986 and 1991. That is to say, trends across the first period suggested an interaction between demographic factors and income support (and other) policies that disproportionately advantaged Maori (the improvements being greater for the crude indices than for the age-standardised indices, indicating that if the age structures of the two populations had been the same, the improvements would have been less). Trends between 1986 and 1991 suggested the opposite—that income support policies *vis-à-vis* demographic factors disproportionately disadvantaged Maori, although it must be emphasised that in only one case (that of unemployed males) did the latter result in an increase in income inequality. These seemingly paradoxical outcomes reflect the fact that for unemployed females, trends (both age-standardised and unstandardised) between 1981 and 1986 had lifted Maori mean incomes above those of European (i.e. an income above unity), whilst trends between 1986 and 1991 merely returned those income relativities to, or closer to, unity. For males and females who were not in the labour force, they reflected the fact that Maori-European income relativities showed a constant improvement across the entire 1981-1991 period, albeit at a decelerating rate between 1986 and 1991. However, if the Maori and European age structures had been the same, the latter—decelerated—improvement between 1986 and 1991 would not have occurred, but rather, income relativity would have remained at its 1986 level, for both sexes.

For each of these periods (1981-1986, and 1986-1991) the latter findings suggested the role of income support policy *vis-à-vis* demographic factors in influencing trends in ethnic income differentials. Although the role of age structure was in each case very small, and in 1991, negligible, the findings are important because many of the changes to the income support structure that occurred *after* the 1991 Census (i.e. after the last observation examined here) either explicitly or implicitly targeted certain age groups. As noted above, the raising of the age of eligibility for the adult rate of

unemployment benefit from 20 to 25 years (along with a substantial reduction in its dollar value) will have disproportionately affected the Maori population by virtue of the age-discriminatory effect obtaining in the unemployment labour force status category. It can therefore be expected that this policy change will have generated a concomitant increase in the age-effect in the income-unemployment category, a proposition that will be testable when data from the 1996 Census become available.

12.2 ETHNIC DIFFERENTIALS IN MEAN INCOME AND OTHER EXPLANATORY FACTORS

Whilst the above discussion has suggested some mechanisms by which ethnic differences in age structure may contribute to the reproduction of ethnic differentials in the future, perhaps more important are recent trends in unexplained inequality, and, in relation to total mean income, in other factors controlled for, such as labour force status and qualifications. For example, standardisation showed that if the proportions of Maori within each labour force status and/or qualification category were the same as European, inequality in mean total income (and inequality within most income categories) would have been somewhat lower. However, at neither the level of mean total income, nor within those income categories where income inequality increased, would the same labour force status and qualification distributions as European have protected Maori against the negative trends. Furthermore, as the underlying levels and trends in labour force status and qualifications *per se* illustrated, the likelihood of Maori achieving the same distributions as European in the near future is highly improbable.

These arguments were strongly supported by cohort analysis, which showed that both intra- and inter-cohort inequality increased in several 'income by labour force by qualification' categories. Especially notable were the large 'full-time employment by other tertiary qualifications' and 'full-time employment by secondary school qualifications' categories, wherein the mean incomes of Maori relative to European were lower in 1991 than in 1981, for almost every cohort, for both sexes. The findings both extend to 1991 earlier arguments by Brosnan (1982, 1984), that rates of return for cultural capital are lower for Maori than for European, and show that rates of return for these particular qualifications have become increasingly negative for Maori.

However, partially offsetting these trends were those for cohorts in the equally large 'still at school/no qualifications' category, wherein the mean incomes of Maori

relative to European were, for males, generally higher in 1991 than in 1981, and for females, almost the same as in 1981—although in only a few cases did these trends place Maori incomes above those of European. Importantly, these comparatively positive trends obtained irrespective of labour force status, suggesting, on the one hand, the role of increases in the minimum wage for those in employment (which are likely to have disproportionately advantaged Maori), and on the other, the role of income support policies. Also offsetting the negative trends were those for cohorts in the 'bachelors/post-graduate' category, wherein the mean incomes of Maori relative to European were generally higher in 1991 than in 1981, although the small size of the category meant that these trends had very little impact on overall trends. Indeed, as implied above, the positive trends, which tended to pertain to smaller proportions of the Maori population, were insufficient to fully offset the negative trends, resulting in the overall increase in total mean income inequality.

12.3 THE ARROW OF TIME

The current age structures of the Maori and European populations reflect not only temporal differences between the two populations in the onset and velocity of demographic transition, but temporal differences in access to its determinants. There is therefore an obligation on the part of the State to concern itself with the current resource needs of the youthful Maori population, in equal measure to the attention being given to the future resource needs of an overall ageing (and primarily European) population. That is to say, the current bulge near the base of the Maori age structure, which derives from the relative lateness of Maori demographic transition—by and large a function of earlier ethnic inequalities—is comparable to the bulge higher up in the European age structure, which was derived from the births of the European baby boom. When those baby boom births occurred, the State centrally concerned itself with the needs of its young families, undertaking substantial investment in education, health and housing, as well as implicitly supporting families through its full-employment policies. The measures extended to such features as capitalisation of the then-universal 'Family Benefit', a weekly per-child payment which, when capitalised (as could be done from 1958), provided many young families with the deposit for a home. By contrast, all such universal benefits, capitalisation facilities, free tertiary education, free health care, and low-cost state housing, were rescinded by 1991, and, although means-tested family

support measures continue to provide a safety net for families in need, they contain no such investment facilities. As a result, the families of the earlier era, and the populations to which they belonged, gained immeasurable contributions to both their individual and aggregate well-being that are no longer available to the disproportion of young Maori families, and thus to the bulk of the Maori population, today.

To restate the situation, under the economic rationalism that has accompanied the demise of the universal, relatively benevolent welfare state and the full-employment policies of the earlier era, there is no facility to accommodate the demographic differentials that have arisen from past inequalities. These differentials, only one side of which (that of the overall ageing—and primarily European—population) appear to be of significant concern to the State, make it disproportionately difficult for Maori to participate in the 'self-sufficient' environment that is the vision of contemporary New Zealand governments and their key policy-makers and lobbyists (Shipley 1991, Shipley et al. 1991; Conference on 'Beyond Dependency', 1997), and contain the potential to further exacerbate ethnic inequality, and ethnic tensions.

Indeed, the findings of this thesis provide a useful perspective for understanding increasing tensions between Maori and European, particularly the increasing militancy of younger Maori. New Zealand's currently-young Maori have entered a very different world to that experienced by their parental generation as young people, for whom trends in most indicators were moving in the positive direction. This is not to say that the situation has not also recently deteriorated for the latter, but rather, that the trend towards greater inequality is generally less pronounced, the more distant the year of birth. For those Maori (from relatively small cohorts) who urbanised and entered the capitalist economy during the high labour intensive demand years of the 1940s and 1950s, the future, by comparison with that of their own parental generation (for whom cohort size was essentially irrelevant because they were largely outside the capitalist economy), must have appeared golden and bright. By contrast, for those who entered it in the 1980s and early 1990s, the arrow of time has brought with it ever-larger cohorts, but simultaneously, an economy that no longer has need of them.

These young Maori cohorts, and those currently approaching the age of labour market entry, will for some time to come comprise ever-larger proportions of the labour force, and of those whose taxes will be needed to support an overall ageing—predominantly European—population. In 1981, 15-19 year old Maori accounted for 19 per cent of all 15-19 year olds, and in 1991, for 21 per cent. Undoubtedly it will be a far

more materially-enriched and harmonious future if those of both ethnic groups are able to actively participate, rather than one group (Maori) disproportionately adding to the dependency burden. If not, the third scenario posited by Hechter (1975), that of incrementally greater militancy and ethnic tensions, is almost certainly assured.

APPENDICES

APPENDIX A

APPENDIX A

Index of Dissimilarity (additional notes):

To counteract the effects of the situation whereby the occupational structure may itself may artifactually influence the amount of occupational differentiation, Gibbs (1965:163) proposed the use of a standardised index in which differences in the size of each occupational category would be controlled for by assigning 1,000 persons to each category, with the same racial ratio in each category as actually obtains in the census data. He explains:

> ..if the occupational structure is such that only a few persons of either race are in the professions, the structure itself operates to reduce the amount of occupational differentiation. Specifically, if the number of persons in occupational category "Professional, technical, and kindred workers" was made larger relative to other categories, the result would be an increase in occupational differentiation because the races are highly differentiated in that category and an expansion of the category would contribute more to the overall amount of occupational differentiation. The same is also true for the category "Private household workers."

The formula that yields the number of males of ethnic group X that would be in a given occupational category is: $X_c = (X_a/Z_a)/1{,}000$; where X_c is the hypothetical number of males of ethnic group X; X_a is the actual number of males in ethnic group X; and Z_a is the total number of persons of ethnic groups X and Y in the occupational category. The corresponding formula for ethnic group Y is: $Y_c = (Y_a/Z_a)$ 1,000. When the X_c and Y_c figures are converted into percentages of their respective totals, the resulting X_d and Y_d values are comparable to X_b and Y_b, except they are now not influenced by differences in the size of the occupational categories (Gibbs 1965:164). Summing the ratios of the X_d and Y_d pairs across all occupational categories derives a standardised measure of differentiation (SMD), the formula for which is: $SMD = ([X_d - Y_d])/2$. Where SMD values are higher than ID values, the occupational structure is such that it reduces the amount of occupational differentiation.

The second—and closely related—issue concerns the argument that if the workforce *were* to be redistributed in the manner implied by the conventional ID, there would be consequential changes in the occupational structure. In order to address this shortcoming, Karmel and MacLachlan (1988:188; see also Fargher and Maani 1993 for a similar argument concerning gender) similarly proposed the use of a weighted index, in this case one that would give a constant occupational structure and identical distributions of male and female labour forces.

Jones (1992), however, argues that such weighted indices represent not indices of dissimilarity but of *replacement,* and that in controlling for group or category size, analysis may be rendered unsatisfactory and potentially misleading. In moderating the degree of segregation between groups by their relative size, for example, the weighted index implies that the smaller the group, the less its degree of pure segregation matters. Jones' example (1992:109) is illustrative:

> Suppose we wish to compare the occupational distributions of two ethnic groups in different places (cities or countries), with relative job distributions that are exactly the same everywhere. But the groups themselves differ in size from one place to the next. The (unweighted) Index of Dissimilarity would show exactly the same degree of ethnic segregation in each case, but the weighted index favoured by Karmel and MacLachlan would not.

Jones concludes that there is in fact no general or decisive theoretical basis for preferring a weighted to a non-weighted index, but agrees that for conceptual clarity there is a need to distinguish pure segregation from group size (1992:110). In terms of

this thesis, however, the key question is whether it is desired to know the extent to which ethnic (or gender) groups are dissimilarly—or similarly—distributed throughout the existing occupational structure, and trends in this factor; or the extent to which the occupational structure would need to be altered for it to be equally distributed amongst a society's ethnic and/or gender groups. Both questions are important, the latter having the more important policy implications if the objective is the complete elimination of occupational segregation (Jones 1992:107). Nevertheless, it is the former with which this thesis is concerned, and thus the conventional formulation of the ID is seen as the most appropriate.

APPENDIX B

APPENDIX B

Component Analysis (additional notes):

Underlying Carmichael's equation for decomposition (equations 3 and 4) are the following processes:

$$M(1) - M(2) = [M(1) - M_{s1}(2)] + [M_{s1}(2) - M(2)]$$

Where

$M(1)$ = Measure 1, relating to Population 1
$M(2)$ = Measure 2, relating to Population 2
$M_{s1}(2)$ = Measure 2 Standardised to Population 1

This process splits the difference between summary measures M(1) and M(2) into two components. The first, $M(1) - M_{s1}(2)$, 'measures that part of the overall difference which is attributable to differences in measures specific for compositional categories, since it measures the difference between the summary measures with differences in composition controlled (directly standardised) for' (Carmichael 1995:51). The second component, $M_{s1}(2) - M(2)$, measures that part of the overall difference which is left after controlling for differences in composition. It is thus the component which is attributable to compositional differences.

If, on the other hand, population 2 is chosen as the standard population, and equivalent procedure yields:

$$M(1) - M(2) = [M(1) - M_{s2}(1)] + [M_{s2}(1) - M(2)]$$

where, in addition to the above notations,

$M_{s2}(1)$ = Measure 1 Standardised to Population 2

and $M_{s2}(1) - M(2)$ and $M(1) - M_{s2}(1)$ are alternative expressions for the components of the difference M (1) - M (2) due to differences in measures specific for compositional categories and in composition, respectively. As these measures tend to differ slightly from those obtained when population 1 is the standard population, the suggested practice is to take averages, the equations for which are given in chapter 4. Importantly, the final sum of the two components should always equal the original difference between the two summary measures being decomposed.

APPENDIX C

Appendix C

Census of Population and Dwellings, 1945 - 1991

Census	Basic Concept	Measurement	Question Design and Categories	Definition of 'Maori'
1945	Race	Degree of blood (full/mixed)	Written response to question. Categories: European, Maori, Race alien [1] (full blood/mixed blood)	Sole origin - Person of '1/2 or more Maori blood'. Includes Maori full blood, European - Maori 1/2 caste, and European - Maori 3/4 caste. Ethnic origin - Person of 'any degree of Maori' origin.
1951, 1956, 1961, 1966, 1971	Race	Degree of blood (full/mixed)	Written response to question. Categories: European, Maori, Other Races [1] (full blood/mixed blood)	Sole origin - Person of '1/2 or more Maori blood'. Includes Maori full blood, European - Maori 1/2 caste, European - Maori 3/4 caste, and Maori - Other Polynesian. Ethnic origin - Person of 'any degree of Maori' origin.
1976	Ethnic origin	Degree of origin (full/mixed) and Maori descent	(a) Tick box (if of full European descent) otherwise written response to question. (b) Tick box (if a person of the Maori race or a descendant of such a person).	Sole origin - Person of '1/2 or more Maori' descent or 'person of the Maori race of New Zealand or a descendant of such a person'. Includes full New Zealand Maori, 3/4 NZ Maori - 1/4 European, 1/2 NZ Maori - 1/2 European, 3/4 NZ Maori - 1/4 Pacific Island Polynesian, 3/4 NZ Maori - 1/4 Other Races, and undefined Maori. Ethnic origin - Person of 'any degree of Maori' origin.

Changes in Ethnic Concepts, Definitions and Classifications Affecting Published Statistics

Other Definitions	Coding Procedures, Priorities and Classifications
'European' - Person of 'more than 1/2 European' blood. Includes European full blood and European - Maori 1/4 caste. 'Race alien' - Person who is of neither European nor Maori blood.	All descendants of unions between Maori and Race aliens, whatever their degree, are classified as 'Race aliens'. Persons of mixed European - Race alien, whatever their degree, are classified as 'Race aliens'.
'European' - Person of 'more than 1/2 European' blood. Includes European full blood and European - Maori 1/4 caste. 'Polynesian' - Person of '1/2 or more Polynesian' blood but excluding 1/2 NZ Maori - 1/2 Polynesian. 'Other Races' - Person of '1/2 or more Other Race' blood but excluding 1/2 NZ Maori - 1/2 Other Races.	Prior to 1956, all combinations of Maori with other races were classified with Other Races. From 1956 to 1971 those with half or more Maori blood were classified with the Maori population, and those with less than half Maori blood were classified with the Pacific Island Polynesian, Other Races, or European categories.
'European' - Person of 'more than 1/2 European' origin. Includes full European, 3/4 European - 1/4 Maori, 3/4 European - 1/4 Pacific Island Polynesian, etc. 'Pacific Island Polynesian' - Person of '1/2 or more Pacific Island Polynesian' origin but excluding 1/2 NZ Maori - 1/2 Pacific Island Polynesian. 'Other Origin' - Person of '1/2 or more Other' origin but excluding 1/2 NZ Maori - 1/2 Other.	In cases of 1/2 - 1/2 mixed ethnic origin the following descending priority order was used: New Zealand Maori, Pacific Island Polynesian, Other Groups (excluding European), European. Persons had to be of at least 1/2 origin to be included in a particular ethnic origin group.

Appendix C- *continued*

Census of Population and Dwellings, 1945 - 1991

Census	Basic Concept	Measurement	Question Design and Categories	Definition of 'Maori'
1981	Ethnic origin	Degree of origin	Tick box question if of 'Only one origin' with written response if of 'More than one' origin. Categories: European, New Zealand Maori, Samoan, Cook Island Maori, Niuean, Tongan, Chinese, Indian, Other (specify).	Sole origin - Person of '1/2 or more Maori' origin. Includes full NZ Maori, 3/4 NZ Maori - 1/4 European, 1/2 Maori - 1/2 European, 3/4 NZ Maori - 1/4 Pacific Island Polynesian, 3/4 NZ Maori -1/4 Other Races, 3 Races - mainly Maori. Ethnic origin - Person of 'any degree of Maori' origin.
1986	Ethnic origin	Ethnic origin or origins specified on a self-determination basis.	Tick box(es) question with written response to 'Other' category. Categories: European, New Zealand Maori, Samoan, Cook Island Maori, Niuean, Tongan, Chinese, Indian, Other.	One ethnic origin - Person of New Zealand Maori origin only. Ethnic origin or descent - Person of New Zealand Maori origin only, or of two or more ethnic origins, one of which is New Zealand Maori.
1991	Ethnic group	Ethnic group or groups specified on a self-determination basis.	Tick box(es) question with written response to 'Other' category. Categories: New Zealand European, New Zealand Maori, Samoan, Cook Island Maori, Tongan, Niuean, Chinese, Indian, Other.	Sole ethnic group - Persons who specified 'NZ Maori' as their only ethnic group. New Zealand Maori ethnic group - Persons who specified 'NZ Maori' as their sole ethnic group or as one of several ethnic groups. Population of New Zealand Maori ancestry - Persons of New Zealand Maori ancestry regardless of whether or not they specified 'NZ Maori' as

Changes in Ethnic Concepts, Definitions and Classifications Affecting Published Statistics

Other Definitions	Coding Procedures, Priorities and Classifications
'European' - Person of 'more than 1/2 European' origin. Includes full European, 3/4 European - 1/4 Maori, 3/4 European - 1/4 Pacific Island Polynesian, etc. 'Pacific Island Polynesian' - Person of '1/2 or more Pacific Island Polynesian' origin but excluding 1/2 NZ Maori - 1/2 Pacific Island Polynesian. 'Other Origin' - Person of '1/2 or more Other' origin but excluding 1/2 NZ Maori - 1/2 Other.	In cases of 1/2 - 1/2 mixed ethnic origin the following descending priority order was used: New Zealand Maori, Pacific Island Polynesian, Other Groups (excluding European), European. Persons had to be of at least 1/2 origin to be included in a particular ethnic origin group.
'European' - Person of solely 'European' origin, or person who stated New Zealander, Eurasian, Caucasian, Dutch, Pakeha, Greek, etc, as sole origin. 'Pacific Island Polynesian' - Person of solely 'Pacific Island Polynesian' origin. Also includes persons of 'two or more Pacific Island' origins, eg Samoan - Tongan. 'Other Origin' - Person of sole origin who is not 'European', 'New Zealand Maori' or 'Pacific Island Polynesian'.	When presenting population data by ethnic group in the 1986 publication *Birthplaces and Ethnic Origin*, categories were split into one, two and three ethnic origins.
'European' - Person of 'New Zealand European' or 'Other European' ethnic group. The 'Other European' group may include combinations of European groups, eg British and/or Dutch and/or Greek, etc. 'Pacific Island' - Person belonging to the 'Pacific Island' ethnic group. Also includes persons from 'two or more Pacific Island' groups, eg Samoan - Tongan. 'Other Origin' - Person belonging to an ethnic group which is not 'European', 'New Zealand Maori' or 'Pacific Island Polynesian'.	When presenting population data by ethnic group in the 1991 Census publication *New Zealand's Multi-cultural Society* two formats were used: (1) tables consistent with the New Zealand Standard Classification of Ethnicity; and (2) tables based on the 50 most frequently reported ethnic groups.

APPENDIX D

APPENDIX D.1

The Treaty of Waitangi

The Treaty of Waitangi, signed on 6th February, 1840, was drafted in two versions, English and Maori. In addition to the relative brevity of the Maori version, which omitted highly significant wording and concepts, significant differences exist in the translation of the Maori version. Uppermost amongst the disputed passages are those which, in the following English version, refer to the cession of 'sovereignty' (Article the First), and the 'full, exclusive, and undisturbed possession of ... properties' (Article the Second). In the Maori version, the use of the terms *kawangatanga* (governorship) in the First Article, and *Rangatiratanga* (chieftainship) in the Second Article, implied that what Maori were ceding was governorship (Royal Commission on Social Policy 1987, Discussion Booklet No.1; Sinclair 1992). As Sinclair (1992:81) and many others have claimed, there is sufficient reason to believe that the shortcomings in translation were deliberate.

Article the First:

The chiefs of the Confederation of the united tribes of New Zealand, and the separate and independent chiefs who have not become members of the confederation, cede to Her Majesty Queen of England, absolutely and without reservation, all the rights and powers of sovereignty which the said confederation of individual chiefs, respectively exercise or possess, or may be supposed to exercise, over their respective territories as the sole sovereigns thereof.

Article the Second:

Her Majesty, the Queen of England, confirms and guarantees to the chiefs and tribes of New Zealand, and to the respective families and individuals thereof, the full, exclusive and undisturbed possession of their Lands and Estates, Forests, Fisheries and other properties which they may collectively or individually possess, so long as it is their wish to retain the same in their possession; but the chiefs of the united tribes and the individual chiefs yield to Her Majesty the exclusive right of pre-emption over such lands as the proprietors thereof may be disposed to alienate, at such prices as may be agreed upon between the respective proprietors and persons appointed by Her Majesty to treat with them on that behalf.

Article the Third:

In consideration thereof Her Majesty, the Queen of England, extends to the natives of New Zealand her Royal protection, and imparts to them all the Rights and Privileges of British subjects.

APPENDIX D.2

CHRONOLOGY OF 19th CENTURY MAORI LAND ALIENATION

YEAR	KEY EVENT/LEGISLATION	OBJECTIVES
1825	First New Zealand Company founded in England	Purchase of Maori land and its sale to settlers
1838	Edwin Gibbon Wakefield's New Zealand Company founded, replacing earlier company	Purchase of Maori land and its sale to capitalists; portion of purchase price to be used to assist passage of labourers to NZ
1839	NZ territory acquired by Crown included in the colony of New South Wales	Jurisdiction of NSW courts over British settlers in NZ since 1820, extended to land
1840	Sydney Land Act; Treaty of Waitangi;	No land title valid unless confirmed through Crown grant; Sovereignty to the Crown; Pre-emptive right over all land purchases to the Crown; Aid to church schools for European children; Maori schools established
1841	New Zealand declared a Crown Colony; Land Claims Ordinance (No.1); Office of Protector of Aborigines; Right of pre-emption waived over much of Wellington, Manawatu, Taranaki	Independence from NSW; All pre-treaty purchases declared null and void until investigated; Paid official to be present at all land sales to ensure lawful and reasonable sales Promotion of direct settler purchase of Maori land
1842	Australasian Land Sales Act	Minimum upset price for sale of Crown land (land purchased by the Crown from Maori) fixed at 1 pound Stirling per acre.
1844	Pre-emption waived	Further promotion of land sales; Fitzroy lowers grant fee to 10 shillings per acre plus 10% of land conveyed to Crown for native reserves; In October grant fee lowered to 1 penny per acre
1846	Office of the Commissioner for the Extinction of Native Title; Pre-emption reinstated	Replaced Office of Protector of Aborigines, objective to transfer communally held Maori land into individual title for purposes of sale
1847	New Zealand Company given entire and exclusive disposal of all Crown lands and the exercise of the Crown's right of pre-emption of lands in the South Island	Land purchase and settlement under the Wakefield Plan, intended to establish New Zealand as an aristocratic 'new Old England' society
1852	Constitution Act, Country divided into six provinces;	Voting rights to adult males with individual land titles or property rights, No Maori representation
1853	Provincial Land Policies; General Land Regulations Act	Grey reduces upset price on rural land in order to assist less financially endowed settlers to purchase, especially Wairarapa and Hawkes Bay

(Continued)

APPENDIX D.2 (Continued)

1858	Waste Lands Act	Validation of earlier Waste Land Acts (1854) which had been disallowed, provides for disposal (sale) of Crown land by provincial councils
1860		Large-scale Land Wars begin in Taranaki
1862	Native Land Act	Encouragement for Maori owners to individualise land holdings for purpose of expediting sale to settlers; Crown's right of pre-emption waived
1863	Land Settlements Act	Grants of free land for military settlers in districts where Maori resistance highest
	Suppression of Rebellion Act	Land confiscation from rebellious tribes (those which resisted land sales)
1865	Native Land Act	Evidence of ownership of traditional lands required by land court, involved prohibitive survey and related costs
1867	Native Representation Act	Four Maori seats established (72 European seats);
	Native Schools Act	Department of Native Affairs take over Maori schools
1870	Vogel Plan	Major borrowing from Britain for establishment of NZ infrastructure
1876	Provincial institutions abolished	
1877	Lands Act repealed; Wi Parata v The Bishop of Wellington	Land policy centralised Treaty declared a nullity
1885	Lands Act	Small grazing-run leases established
1886	Native Lands Administration Act	Maori land control turned over to small groups of trustees with the right of sale; Leasehold system further developed
1892	Lands Act	Lease-in-perpetuity introduced
1893	Native Land Purchase and Acquisition Act	Reintroduces Crown as sole purchaser of Maori lands; empowered to acquire any land suitable for settlement

Source: Compiled from Sutch 1956; Condliffe 1959; Department of Social Welfare 1988; Rice 1992

By beginning the chronology of Maori land alienation with the founding of the New Zealand Company prior to the signing of the Treaty of Waitangi, important aspects of the Treaty itself and many of the events that followed can be more readily understood. The company, founded by Edwin Gibbon Wakefield in 1838, was the second of two speculative ventures undertaken by a small group of capitalists for the purpose of buying up Maori land and selling it on at profit, not only to potential settlers but also to absentee landlords who would remain in Britain or Australia. However, although claiming by 1839 to have purchased almost one third of New Zealand's land mass—20 million acres 'purchased' at a rate of approximately 10 acres per penny Stirling—Wakefield's Company was in fact pre-selling large tracts of land that it did not legitimately own (Sutch 1942:18). Tensions arising between settlers trying to take possession, and Maori refusing to hand over the land, were highly instrumental in the formulating of the Treaty. Indeed it remains to the Crown's credit that as part of the Treaty negotiations all transactions prior to 1840 were declared null and void until they

could be investigated, the subsequent inquiry awarding to the New Zealand Company only 283,000 acres (Sutch 1942:18).[1]

A mitigating factor in the eventual escalation of tensions and outbreak of war in 1863, however, was that the British Government demanded that the new colony was not to be a drain on the British taxpayer, but self-supporting through duties on land sales and customs. This was to be achieved in large part via a pre-emptive right over all Maori land conceded to the colonial Government. Acknowledging Maori customary title, only land regarded as surplus to tribal requirements could be offered for sale by Maori, and then it could be purchased only by government agents, who would sell it on to settlers. The resulting funds would be used to bring to New Zealand a continuing flow of British immigrants, and to assist in the establishment of a market-oriented infrastructure.[2]

Despite its apparent disfavour with the Crown over the earlier land transactions, the role of the New Zealand Company and its associated Wakefield Plan was of consummate significance to these plans. Indeed, in the same year the Treaty was signed, the New Zealand Company was accepted by the Crown as the official promoter of settlement in New Zealand. The Wakefield Plan, which envisaged the establishment of New Zealand society along the elitist lines of British society, proposed to settle New Zealand according to systematic principles whereby 'a proper balance would be achieved between land [the purchase of which would be restricted to capitalists], capital, and labour' (Gardner 1992:59). Deploring both what he saw as emergent socialist tendencies in Britain, and the fact that in the American colonies it was difficult for capitalists to find labourers and so accumulate capital because there 'men acquired land easily, supported themselves by their own labour, built their own houses, and made their own soap and shoes and clothes' (Sutch 1942:14), Wakefield determined that New Zealand should follow a very different path. Although committed to the idea of a rigid two-class capitalist system (owners and labourers), an important element of the plan was the suggestion that potential social mobility awaited immigrants. In essence, the proposal was that

> the ruling authority should put a high price on virgin land so that the labourer would have to work a considerable time before he [sic] could save enough to become a landowner.... the ruling authority would take part of the wages of workers in exchange for the land priced above its value. This money would go into a fund and be used to import other wage workers so that the labour market would always be well supplied... [E]very labourer who left off working for wages and became a landowner would, by purchasing land, provide a fund for bringing fresh labour to the colony (Sutch 1942:15).

Despite clear indications of the direction that the colonisation of New Zealand under such conditions would take, the fact that Britain viewed New Zealand as a significant settler colony was never communicated to Maori during the Treaty negotiations (Gardner 1992:58). Nor was the possibility of eventual Pakeha (non-Maori) dominance in any way obvious. At the time, Maori outnumbered Pakeha by

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[1] It must be noted that the New Zealand Company was not the only group claiming significant landholdings and resale rights. An Australian syndicate (founded by an Australian stateman, Wentworth) claimed at the time to have purchased a further third of New Zealand (Sutch 1942:19).

[2] It is important to acknowledge here the social and economic context in which both the New Zealand Companies and the Treaty of Waitangi were established. The labouring classes of Britain and Ireland, from within which the majority of New Zealand's first immigrants came, were at the time suffering impoverished social conditions due to the machinations of land enclosure, the onset of the industrial revolution, and the Poor Laws. Consequently, a number of interpretations have been placed on the decision to colonise and settle New Zealand, not least the possibility of ameliorating the threat of social revolution. However, the argument that 'the sending of men and capital to the colonies and the development of subsequent international trade [would help] the trade of the mother country' (Sutch 1942:12-14) was also undoubtedly involved.

approximately 40:1. Furthermore, not only were Maori becoming highly prosperous from trade with settlers, but approximately half the Maori population attended the mission schools and had a higher level of literacy than the settler population (Sutch 1942:33, 1959:68-69).[3]

To be fair, and as implied above, the Treaty's pre-emption clause was also ostensibly concerned with protecting Maori from unscrupulous transactions. As the chronological table shows, one of Hobson's first acts as New Zealand's first governor was to establish the Office of Protector of the Aborigines (1841), a paid public official whose duty was to be present at all land sales and to ensure that such transactions were lawful and reasonable (Temm 1989:2). Although the pre-emption clause was intermittently waived over the next few years in order to encourage land sales, the early 1840s can be seen as a period during which the fledging colonial Government, whilst simultaneously attempting to become self-supporting, also attempted to observe the underlying principles of the Treaty.[4]

By 1845, however, the impossibility of the self-supporting principle was evident and the colonial Government, by then under the charge of Governor Fitzroy, was in deep financial trouble. The New Zealand Company, which had initially guaranteed employment to immigrants - and later, in lieu of employment, financial support - had not only failed to ensure a working balance between employers and labourers[5] but had also, in 1844, stopped paying any relief at all (Sutch 1924:23). In many areas starving families were kept alive only by the produce and goodwill of Maori. On the other hand, Maori themselves were beginning to demand fairer prices for the land they were willing to sell, and the amount of land coming available was reducing. As a result, the Government was under heavy pressure from both individual settlers desperately in need of land for subsistence purposes, and from the New Zealand Company which still believed the answer lay in attracting more capitalists. With one of the major hindrances to the sale of land the fact that the different Maori tribes held that land in communal title, government agents began to use and foster tribal discord in order to promote land purchases (Gardner 1992:59, see also Sorrenson 1956:81).

In 1846, Fitzroy's successor, Governor George Grey, responded to these pressures by abolishing the Office of Protector of the Aborigines and replacing it with the Office of the Commissioner for the Extinction of Native Title (Temm 1989:3). Its sole objective was the transference of communally held Maori land into individual title. Although strongly opposed to certain aspects of the Wakefield Plan, the following year Grey also gave the New Zealand Company the entire and exclusive disposal of all Crown lands, and exercise of the Crown's right of pre-emption of land in the South Island. This innovation came to an abrupt end with the surrender of the Company's

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[3]In large part this prosperity came about through the articulation of the Maori communal mode of production with that of the market economy. It was also reflective of how rapidly Maori adapted to Pakeha ideas. As a government official of the time wrote "[Maori] have now wise men among themselves to calculate the cubic contents of a heap of firewood, the area of a plot of ground, the live weight of a pig and the value at threepence a pound, sinking a fifth as offal ... the relative merits of two mill sites [and] over- or under-shot wheels ... (Miller 1940:79-80, cited in Sutch 1941:34).

[4] Hobson's resistance to the rapacious demands of the New Zealand Company and the settlers, coupled with his responsibilities to the Crown were possibly instrumental in his early death in office in September 1842 (Dalziel 1992:89).

[5] This failure was the weakest point of the Wakefield Plan, and largely led to its eventual downfall. The imbalance can be gleaned from the settlement of Nelson, where at no time did more than 80 landowners (75 per cent of the original Nelson capitalists and absentee owners combined) ever take charge of their estates, while the Company sent 3,100 men, women and children of the labouring class (Sutch 1942:20-21). An additional problem was that pastoral farming, the major industry of the period, was for the most part not very labour intensive.

charter in 1850. However, by concomitant virtue of a significant injection of funds from the Crown, within seven years the change of emphasis had permitted Grey and his chief purchasing officer to obtain around 32 million acres, almost half of the land area of New Zealand (Gardner 1992:61).

Whilst ostensibly still recognising the primacy of the Treaty principles, and indeed being constantly reminded of the solemnity of the contract by the Crown (Temm 1989:3-4), it is clear that the contradiction between the Treaty and the Crown's directives was leading to one outcome only: a society dominated by Pakeha ideas and institutions, and ultimately, war. For example, the Constitution Act of 1852, which gave voting rights to adult males holding land in individual title only, carried no opportunity for Maori representation, whilst it simultaneously gave enormous political and economic power to the wealthy land owners of the South Island. In 1853, with sufficient land in hand, Grey endeavoured to counter some of the more inegalitarian effects of the Wakefield Plan by introducing legislation designed to assist less financially endowed settlers (Sutch 1942:36-7). However, through the use of various devices, not least encumbent positions on Provincial Councils, the wealthy, and especially the larger land-owning settlers, were able to capture these opportunities for themselves and keep the small farmer out (Condliffe 1930:103). From the mid 1850s a series of Waste Lands Acts, designed to further assist in the disposal (resale) of Crown lands - also by the incumbents of Provincial Councils; and of Native Land Acts, designed to further facilitate the extinction of native title and so free more Maori land for sale, were instituted.

By 1856 the whole of the South Island and more than 6 million acres of the North had passed into Pakeha hands (Sutch 1942:33). Large grants for the purchase of Maori land were available for the North Island, with particular attention focused on the Taranaki region and the fertile plains of the Waikato. The affected tribes, however, highly prosperous from their trade with the early settlers, seriously resisted pressure to sell. The eventual outcome was war, ordered in 1863 by Governor George Grey (Temm 1989:8). However, not content with the disproportionately high loss of Maori lives, nor the fact that the wars were in deliberate violation of Article II of the Treaty, the Suppression of Rebellion Act (1863) and the Land Settlements Act (1863) were quickly passed to provide for the confiscation of the sought-after land from rebellious tribes. As Scott (1975:19, cited by Bedggood, p.27) explains, the process by which Maori land was taken at this point was breathtaking in its simplicity: Maori land was wrongfully seized; Maori resisted; the land was confiscated. Moreover, where Maori resistance was highest, the Land Settlements Act provided for free grants of confiscated land to military settlers (Condliffe 1959), essentially ensuring a continuance of the tensions.

At the end of the wars the Native Land Court (1865) and a new Native Lands Act (1865) were also instituted, further facilitating the conversion of Maori land to individual title, though by this time for the purpose of its direct sale to settlers. From this point, however, a new condition was added. Evidence of ownership of traditional lands was now required, a change which involved prohibitive survey and legal costs. Drawn into debt in order to prove ownership, the land was often impounded by way of discharging the debt.

The consequences of the foregoing begin with Chapter 6.

APPENDIX D.3

3.1: MAORI POPULATION: PERCENTAGE IN EACH FIVE-YEAR AGE GROUP, MALE, 1911-1991

Five-Year	De Facto Population												De Jure Population					
	Sole Maori (Half or more Maori blood)												Single Origin		Single Eth Grp.	Maori Ethnic Group		
Age Group	1911	1916	1921	1926	1936	1945	1951	1956	1961	1966	1971	1976	1981	1986	1991	1981	1986	1991
0-4	13.63	14.77	12.66	15.76	16.79	16.57	18.40	19.26	19.90	19.78	16.96	14.95	12.51	11.56	12.68	14.11	13.62	14.67
5-9	13.62	13.57	14.09	13.63	14.82	15.86	14.22	15.48	16.13	16.95	17.29	15.30	13.40	11.22	10.67	14.53	12.89	12.14
10-14	11.80	12.86	12.32	12.47	12.24	13.58	13.42	12.18	13.06	13.64	14.91	15.60	14.17	12.20	10.59	14.30	13.31	11.76
15-19	9.65	8.29	9.89	10.56	9.60	10.67	10.51	10.41	9.11	9.86	10.53	12.25	13.30	12.36	11.21	13.15	12.32	11.65
20-24	8.17	6.95	8.94	8.77	9.37	7.35	8.78	8.50	8.41	7.25	7.99	8.93	10.24	11.66	10.28	10.09	10.89	9.70
25-29	7.32	6.22	7.04	7.38	7.78	6.36	7.13	7.35	7.21	7.03	6.20	6.98	7.60	9.39	9.51	7.48	8.64	8.76
30-34	5.62	5.01	5.78	5.13	5.31	5.95	5.19	5.47	5.88	5.76	5.92	5.30	6.27	7.19	8.12	6.05	6.59	7.48
35-39	5.02	4.77	5.15	5.20	5.18	5.59	5.25	4.76	4.75	5.02	5.07	5.17	4.82	5.79	6.44	4.46	5.30	5.87
40-44	6.13	7.93	4.60	4.26	3.94	4.02	4.46	4.07	3.70	3.63	4.08	4.11	4.72	4.47	5.24	4.19	3.97	4.73
45-49	7.07	7.24	3.92	4.02	3.75	3.85	3.45	3.89	3.47	3.13	3.19	3.46	3.90	4.16	4.00	3.41	3.65	3.53
50-54	3.29	3.55	3.69	3.16	2.93	2.52	2.68	2.50	2.83	2.50	2.38	2.50	3.08	3.35	3.70	2.73	2.92	3.20
55-59	2.17	2.36	2.30	2.50	2.32	2.27	2.06	2.09	1.94	2.08	1.98	1.88	2.17	2.57	2.87	1.97	2.25	2.45
60-64	2.24	2.41	2.30	2.16	1.83	1.75	1.62	1.40	1.45	1.35	1.47	1.47	1.50	1.72	2.06	1.37	1.53	1.76
65-69	1.73	1.44	1.47	1.74	1.77	1.37	1.16	1.07	0.96	0.98	0.96	1.03	1.10	1.06	1.27	1.02	0.95	1.12
70-74**	2.39	2.26	2.00	1.30	0.97	0.80	0.71	0.67	0.57	0.48	0.54	0.56	0.67	0.66	1.36	0.63	0.60	0.62
75-79	...	...	...	0.69	0.58	0.46	0.41	0.42	0.37	0.32	0.29	0.30	0.33	0.38	...	0.31	0.34	0.35
80+	...	...	...	0.73	0.60	0.39	0.33	0.33	0.26	0.25	0.23	0.21	0.22	0.26	...	0.20	0.23	0.23
Age NS.	0.14	0.39	3.87	0.55	0.24	0.63	0.21	0.14	...	...	...	...	...	...	...	...	...	...
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	26475	25940	27908	33258	42863	50275	59322	70089	84970	102107	114948	135777	137058	148023	160773	192798	201897	214431

3.2: MAORI POPULATION: PERCENTAGE IN EACH FIVE-YEAR AGE GROUP, FEMALE, 1911-1991

Five-Year	De Facto Population												De Jure Population					
	Sole Maori (Half or more Maori blood)												Single Origin		Single Eth Grp.	Maori Ethnic Group		
Age Group	1911	1916	1921	1926	1936	1945	1951	1956	1961	1966	1971	1976	1981	1986	1991	1981	1986	1991
0-4	14.65	15.46	13.35	16.90	17.30	16.59	18.60	18.97	20.39	19.53	16.81	14.62	12.12	11.03	12.18	13.70	12.94	13.86
5-9	14.12	13.75	14.98	14.12	15.84	15.85	14.42	15.63	15.89	17.28	17.09	15.07	13.06	10.87	10.13	14.14	12.34	11.36
10-14	12.17	12.11	12.20	12.76	12.87	13.67	13.72	12.35	13.09	13.51	15.04	15.08	13.73	11.66	10.14	13.96	12.85	11.23
15-19	9.49	8.84	10.03	10.69	9.81	10.87	10.54	10.60	9.34	9.80	10.39	12.27	12.90	11.95	10.58	12.85	12.10	11.31
20-24	8.79	8.02	9.40	8.93	9.59	8.85	9.18	8.97	8.70	7.62	8.26	9.02	10.64	11.62	10.43	10.50	11.04	10.01
25-29	7.44	6.61	6.93	7.46	7.65	7.30	7.37	7.60	7.48	7.17	6.48	7.26	7.98	9.92	10.02	7.75	9.20	9.43
30-34	5.72	4.80	5.88	5.19	5.12	6.06	5.68	5.87	6.12	5.88	5.95	5.56	6.49	7.46	8.78	6.18	6.88	8.15
35-39	4.90	4.71	4.85	4.68	5.01	5.23	5.41	5.02	4.91	5.12	5.16	5.25	5.17	5.98	6.60	4.72	5.46	6.09
40-44	6.11	7.30	4.30	4.13	3.66	3.78	3.91	4.11	3.70	3.83	4.16	4.20	4.73	4.65	5.29	4.24	4.12	4.81
45-49	6.49	6.44	3.36	3.41	3.00	3.14	3.15	3.29	3.33	3.08	3.23	3.53	3.83	4.25	4.07	3.36	3.71	3.57
50-54	2.82	2.89	3.23	2.76	2.47	2.07	2.31	2.27	2.33	2.44	2.39	2.59	3.08	3.34	3.64	2.78	2.90	3.16
55-59	1.57	1.95	1.92	2.03	1.85	1.73	1.69	1.80	1.66	1.72	1.86	1.91	2.24	2.62	2.85	2.04	2.31	2.45
60-64	1.90	1.91	2.08	2.20	1.95	1.49	1.40	1.19	1.25	1.21	1.31	1.47	1.61	1.82	2.15	1.47	1.61	1.85
65-69	1.48	1.25	1.43	1.52	1.48	1.22	1.01	0.90	0.79	0.85	0.86	1.02	1.14	1.18	1.41	1.05	1.04	1.21
70-74**	2.26	2.11	1.96	1.28	0.91	0.63	0.62	0.56	0.46	0.43	0.53	0.55	0.67	0.82	1.76	0.66	0.73	0.73
75-79	...	...	...	0.58	0.47	0.38	0.34	0.32	0.28	0.28	0.26	0.37	0.35	0.44	...	0.34	0.41	0.44
80+	...	...	...	0.90	0.77	0.57	0.48	0.38	0.29	0.25	0.23	0.24	0.27	0.38	...	0.26	0.34	0.34
Age NS.	0.09	1.85	4.12	0.47	0.26	0.60	0.17	0.18	...	...	...	...	...	...	...	...	...	...
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	23369	23836	24843	30412	39463	48469	56354	67062	82116	99052	112466	134258	136575	147288	162726	192420	202878	220413

(continued over)

APPENDIX D.3 (Continued)

3.3 NON-MAORI POPULATION*: PERCENTAGE IN EACH FIVE-YEAR AGE GROUP, MALE, 1911-1991

Five-Year	De Facto Population (a)												De Jure Population (b)		(c)	(d)		
Age Group	1911	1916	1921	1926	1936	1945	1951	1956	1961	1966	1971	1976	1981	1986	1991	1981	1986	1991
0-4	11.28	12.20	10.56	10.00	7.91	10.56	11.87	11.45	11.71	11.01	10.06	9.17	7.81	7.53	8.06	7.39	7.08	7.60
5-9	10.12	11.30	10.78	9.86	8.67	8.56	9.22	10.98	10.65	10.91	10.52	9.70	9.09	7.70	7.43	8.75	7.33	7.09
10-14	8.73	10.06	9.89	9.95	9.13	7.77	7.70	8.46	10.12	9.87	10.42	10.00	9.57	8.91	7.54	9.37	8.63	7.26
15-19	8.42	8.16	8.74	9.25	8.91	8.26	6.64	7.01	7.76	9.28	9.20	9.58	9.72	9.17	8.46	9.60	9.05	8.29
20-24	9.34	5.51	7.70	8.44	8.95	5.95	7.27	6.18	6.46	7.25	8.38	8.38	8.66	8.56	7.95	8.61	8.56	7.95
25-29	10.28	7.25	7.11	7.56	8.43	6.59	7.65	7.27	5.98	6.26	6.65	8.15	7.58	8.10	7.84	7.60	8.16	7.89
30-34	9.29	8.37	7.60	6.60	7.41	7.42	7.01	7.29	6.82	5.69	5.88	6.57	7.73	7.58	8.03	7.82	7.68	8.13
35-39	7.42	8.36	8.04	7.14	6.71	7.48	7.24	6.60	6.82	6.43	5.41	5.80	6.27	7.58	7.43	6.38	7.72	7.55
40-44	5.87	6.66	7.35	7.12	5.75	6.81	6.84	6.61	6.03	6.26	5.97	5.07	5.51	6.09	7.31	5.62	6.22	7.47
45-49	4.55	5.98	6.02	6.69	6.11	6.06	6.06	6.23	6.05	5.56	5.87	5.57	4.89	5.26	5.81	5.00	5.38	5.95
50-54	3.81	4.35	4.82	5.13	6.06	5.18	5.11	5.26	5.49	5.33	5.05	5.24	5.25	4.65	4.92	5.39	4.77	5.04
55-59	3.14	3.39	3.42	3.95	5.42	5.32	4.17	4.42	4.59	4.78	4.79	4.49	4.92	4.92	4.32	5.06	5.05	4.44
60-64	2.41	2.92	2.71	2.81	3.95	4.98	4.06	3.41	3.57	3.85	4.10	4.13	4.04	4.44	4.48	4.17	4.58	4.62
65-69	2.06	2.03	2.16	2.11	2.87	4.07	3.67	3.16	2.71	2.86	3.16	3.39	3.53	3.46	3.87	3.64	3.57	3.99
70-74**	3.13	3.32	3.03	1.53	1.76	2.54	2.79	2.61	2.25	1.93	2.12	2.32	2.63	2.79	6.53	2.72	2.88	2.91
75-79	...	...	...	0.88	1.06	1.47	1.58	1.77	1.66	1.43	1.25	1.37	1.61	1.83	...	1.67	1.89	2.09
80+	...	...	...	0.71	0.79	0.92	1.05	1.21	1.32	1.30	1.19	1.06	1.17	1.43	...	1.21	1.47	1.75
Age NS.	0.16	0.13	0.10	0.27	0.12	0.08	0.08	0.07	...	...	...	...	...	...	...	...	...	...
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	531910	551775	623243	686384	756226	782602	914646	1023122	1128406	1241636	1315908	1426265	1425495	1468656	1501782	1369755	1414782	1448124

3.4 NON-MAORI POPULATION*: PERCENTAGE IN EACH FIVE-YEAR AGE GROUP, FEMALE, 1911-1991

Five-Year	De Facto Population (a)												De Jure Population (b)		(c)	(d)		
Age Group	1911	1916	1921	1926	1936	1945	1951	1956	1961	1966	1971	1976	1981	1986	1991	1981	1986	1991
0-4	12.16	11.82	10.64	10.00	7.74	9.68	11.50	11.16	11.28	10.56	9.63	8.75	7.39	7.01	7.48	6.98	6.59	7.05
5-9	10.95	11.04	10.87	9.90	8.54	7.96	8.89	10.55	10.25	10.48	10.03	9.24	8.57	7.22	6.84	8.24	6.87	6.54
10-14	9.44	9.80	10.04	9.98	9.01	7.06	7.52	8.16	9.74	9.45	9.91	9.50	9.05	8.39	7.01	8.83	8.10	6.73
15-19	9.16	8.47	8.88	9.24	8.82	7.71	6.34	6.86	7.43	8.94	8.79	9.14	9.15	8.64	7.93	9.01	8.49	7.72
20-24	9.68	8.54	8.26	8.34	8.96	8.09	7.02	5.97	6.33	6.95	8.05	8.08	8.15	8.19	7.63	8.07	8.13	7.58
25-29	9.97	8.87	8.21	7.87	8.33	7.89	7.49	6.75	5.72	6.09	6.47	7.94	7.55	7.97	7.94	7.57	8.00	7.95
30-34	8.96	8.66	8.06	7.54	7.27	7.84	7.26	7.05	6.34	5.43	5.75	6.36	7.61	7.55	8.03	7.70	7.63	8.09
35-39	7.02	8.09	7.94	7.54	6.95	7.30	7.27	6.81	6.59	5.99	5.18	5.61	6.13	7.43	7.37	6.23	7.56	7.48
40-44	5.72	6.18	7.08	7.09	6.47	6.34	6.62	6.65	6.23	6.08	5.59	4.82	5.36	5.90	7.13	5.46	6.03	7.27
45-49	4.34	5.07	5.45	6.31	6.35	5.92	5.76	6.02	6.03	5.71	5.67	5.16	4.64	5.10	5.59	4.74	5.20	5.72
50-54	3.48	3.85	4.34	4.72	5.92	5.37	5.22	5.05	5.35	5.41	5.23	5.17	4.90	4.42	4.78	5.02	4.53	4.89
55-59	2.65	2.85	3.11	3.65	5.11	5.11	4.62	4.56	4.46	4.75	4.91	4.75	4.86	4.62	4.13	5.00	4.74	4.24
60-64	2.15	2.30	2.48	2.75	3.80	4.68	4.36	3.99	3.90	3.95	4.30	4.49	4.46	4.56	4.31	4.60	4.69	4.44
65-69	1.83	1.75	1.85	2.01	2.88	3.94	3.93	3.68	3.46	3.41	3.56	3.86	4.06	4.03	4.15	4.19	4.15	4.28
70-74**	2.40	2.60	2.71	1.34	1.84	2.47	3.03	2.99	2.87	2.72	2.78	2.88	3.29	3.49	9.68	3.39	3.61	3.64
75-79	...	...	...	0.82	1.09	1.54	1.77	2.10	2.11	2.04	1.99	2.07	2.31	2.62	...	2.40	2.71	2.96
80+	...	...	...	0.68	0.82	1.06	1.33	1.57	1.89	2.02	2.15	2.19	2.50	2.85	...	2.59	2.95	3.43
Age NS.	0.11	0.10	0.09	0.23	0.10	0.05	0.08	0.10	...	...	...	...	...	...	...	...	...	...
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	476558	547674	595670	658085	735258	820952	909150	1013789	1119492	1234124	1319309	1433083	1444182	1499328	1548648	1388337	1443738	1490961

Notes: *Non-Maori = Total Population minus specific Maori classification

(a) Total Population minus Sole Maori; (b) Total Population minus Single Origin Maori; (c) Total Population minus Single Ethnic Group Maori; (d) Total Population minus Maori Ethnic Group

1911-1976 = *De Facto* Population; 1981-1991 = *De Jure* Population; No Census was taken in 1931 and 1941

**1911-1921 and 1991, oldest age group = 70+ years

Source: Compiled from age volumes, *Census of Population and Dwellings*, various years

APPENDIX D.4

Births, Crude Birth Rates and Total Fertility Rates, Maori, Non-Maori and Total Populations, 1844-1995

	Birth Numbers			Crude Birth Rate			Total Fertility Rate		
	Non-Maori	Maori	Total	Non-Maori	Maori	Total	Non-Maori	Maori	Total
1844								*4.5*	
1857/8								*4.9*	
1866	8466			42.9					
1871	10592			40.6			*6.66*		
1874	12844			40.3					
1876	16168			41.7			*6.6*		
1878	17770			42.0				*5.5*	
1881	18372			38.0			*6.2*		
1886	19299			33.2			*5.3*	*6.1*	
1891	18273			29.0			*4.6*	*5.7*	
1896	18612			26.3			*4.0*	*5.7*	
1901	20491			23.3	*42*		*3.56*	*5.9*	
1906	24252			27.1			*3.3*		
1911	26354			26.0	*40*		*3.2*	*5.7*	3.33
1916	28509			25.94					3.19
1921	28567		29623	23.36	*42*	23.24	2.95	*6.1*	3.08
1926	28473	1536	29904	21.06	25.27	21.15	2.72	*6.7*	2.88
1931	26622	2312	28867	18.45	33.74	19.06	2.38		2.56
1936	24765	3630	28395	16.64	43.79	18.03	2.11	*6.9*	2.30
1941	35036	4134	39170	22.81	44.77	24.02	2.81		2.93
1945	36890	4644	41534	23.22	46.10	24.51	3.26	*6.5*	3.10
1951	44568	5238	49806	24.39	44.97	25.57	3.40	*6.7*	3.60
1956	50368	6163	56531	24.66	44.63	25.90	3.79	*6.9*	3.98
1961	57620	7770	65390	25.53	46.39	26.95	4.15	*6.9*	4.31
1962	57405	7609	65014	24.86	43.41	26.16	4.04	6.18	4.19
1963	56495	8032	64527	23.99	44.06	25.44	3.87	6.28	4.05
1964	54421	7881	62302	22.68	41.63	24.06	3.62	5.96	3.80
1965	52271	7776	60047	21.43	39.63	22.79	3.36	5.71	3.54
1966	52260	7743	60003	21.07	38.25	22.37	3.23	5.54	3.41
1967	53026	7996	61022	21.04	38.47	22.37	3.17	5.57	3.35
1968	54023	8089	62112	21.27	37.96	22.56	3.16	5.46	3.34
1969	54199	8161	62360	21.16	37.41	22.43	3.11	5.35	3.28
1970	53857	8193	62050	20.74	36.68	22.01	2.99	5.18	3.17
1971	56096	8364	64460	21.29	36.49	22.51	3.01	5.05	3.18
1972	55345	7870	63215	20.66	33.32	21.68	2.86	4.51	3.00
1973	53343	7384	60727	19.51	30.45	20.40	2.65	4.01	2.76
1974	52353	6983	59336	18.74	28.16	19.51	2.49	3.58	2.58
1975	49861	6778	56639	17.52	26.72	18.27	2.28	3.28	2.37
1976	48479	6626	55105	16.87	25.59	17.60	2.18	3.08	2.27
1977	47394	6785	54179	16.46	25.74	17.24	2.13	2.98	2.21
1978	44449	6580	51029	15.46	24.50	16.23	1.99	2.75	2.07
1979	45625	6654	52279	15.93	24.30	16.66	2.06	2.65	2.12
1980	44122	6420	50542	15.39	23.16	16.08	1.98	2.43	2.03
1981	44189	6605	50794	15.36	23.61	16.09	1.95	2.47	2.01
1982	43722	6216	49938	15.08	21.97	15.70	1.90	2.27	1.95
1983	44203	6271	50474	15.04	21.90	15.67	1.87	2.23	1.92
1984	44891	6745	51636	15.13	23.27	15.87	1.87	2.34	1.93
1985	45329	6469	51798	15.22	22.07	15.83	1.88	2.20	1.93
1986	46310	6513	52823	15.53	21.94	16.12	1.93	2.14	1.96
1987	48272	6982	55254	16.04	23.05	16.73	1.99	2.26	2.03
1988	50779	6767	57546	16.79	21.94	17.35	2.08	2.17	2.10
1989	51124	6967	58091	16.82	22.22	17.44	2.10	2.21	2.12
1990	53206	6947	60153		21.77	17.89	2.17	2.19	2.18
1991	53055	6946	60001		21.45	17.62	2.15	2.19	2.16
1992	52028	7238	59266		22.17	17.22	2.10	2.29	2.12
1993	51735	7132	58867		21.66	16.91	2.07	2.29	2.10
1994	50382	7053	57435		21.28	16.29		2.29	2.04
1995	50559	7239	57798		21.67	16.14		2.38	2.04

Notes: Italics denote estimates; Data are for December year populations;
Data above ruled line = five-year observations, that below line = single year.
The Crude Birth Rate is the number of births per 1,000 mean population.
The Total Fertility Rate is the average number of live births a woman would have over her life-time if she were to experience the age-specific fertility rates occurring in a particular reference year.

Source: Birth Numbers: *Vital Statistics, Demographic Trends*, various years.
Non-Maori CBRs prior to 1921, reconstructed from Sceats and Pool 1985, Figure 25 (estimates)
Non-Maori CBRs 1921-1961, Jain (no date)
Non-Maori CBRs and TFRs 1962-1993, Cheung, Pool and Jackson 1994
Total CBRs and TFRs, 1911-1961, Khawaja 1986.
Maori CBRs and TFRs prior to 1962, Pool 1991, Tables 5.3 and 6.2 (estimates)
Maori and Total CBRs and TFRs, 1962-1993, *Demographic Trends 1994, Table 2.8*

APPENDIX D.5

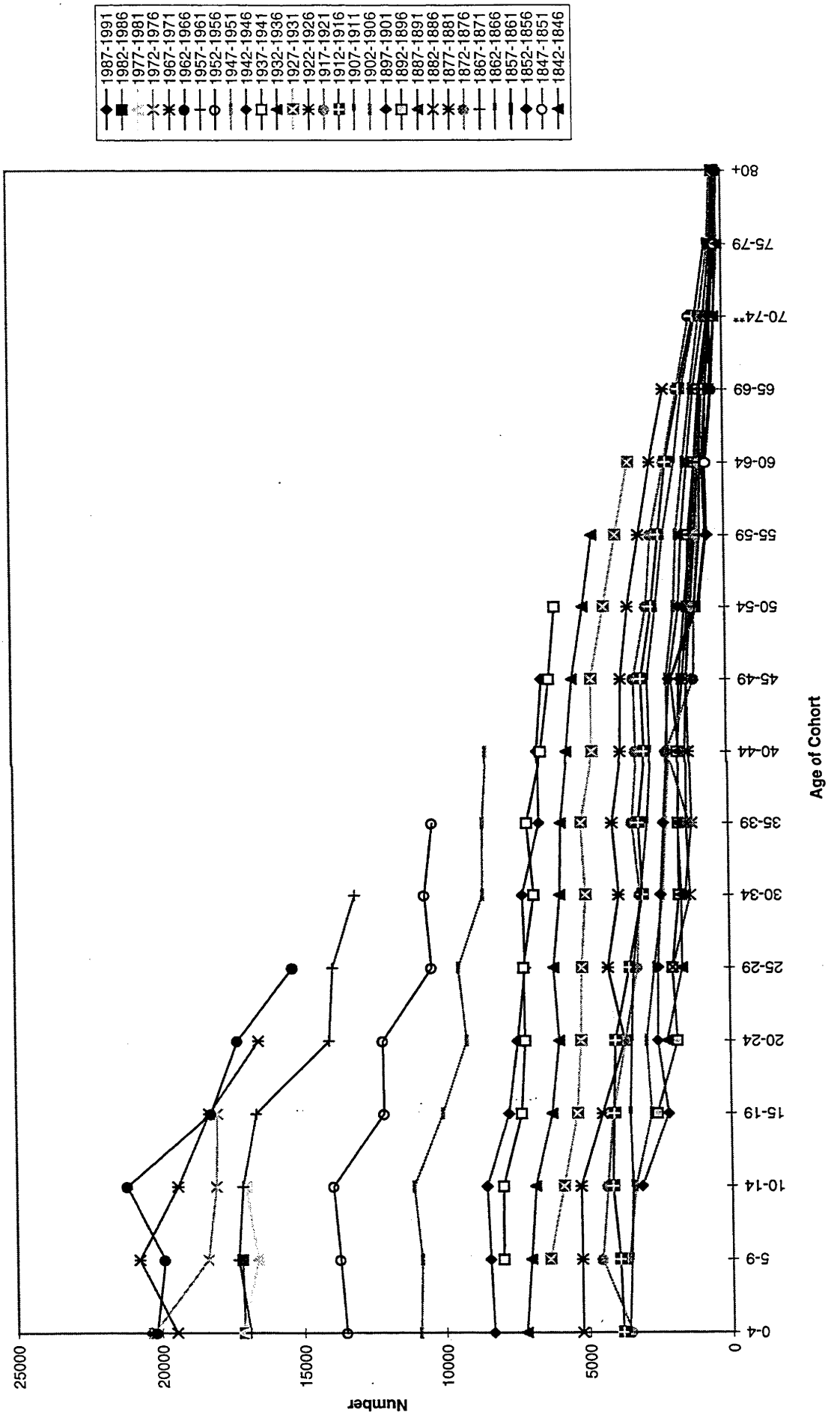
Life Expectancy at Birth, Maori and European/Non-Maori, by Sex, 1840-1995

	Non-Maori		Maori	
	Male	Female	Male	Female
1840	31.0	32.0	31.0	32.0
	...	...	...	...
1856	...	...	...	22.0
	...	...	...	...
1876	52.0	54.2	...	...
1881	52.8	56.3	...	...
1886	54.0	57.2	...	...
1891	55.3	58.1	...	22.0
1896	57.4	60.0	22.0	24.0
1901	58.1	60.6	...	30.0
1906	59.2	61.8	...	31.0
1911	61.0	63.5	...	32.5
1916	60.6	64.2	...	37.0
1921	62.8	65.4	...	40.0
1926	63.7	66.3	46.6	44.7
1931	65.1	67.7	46.5	45.4
1936	65.5	68.5	46.3	46.0
1941	65.5	69.1	47.5	46.7
1946	67.2	70.6	48.8	48.0
1951	68.3	72.4	54.0	55.9
1956	68.9	73.9	57.2	58.7
1961	69.2	74.5	59.1	61.4
1966	68.7	74.8	61.4	64.8
1971	69.1	75.2	61.0	65.0
1976	69.4	75.9	63.4	67.8
1981	70.5	76.4	65.2	68.3
1986	71.1	77.1	67.4	72.3
1991	72.9	78.7	68.0	73.0

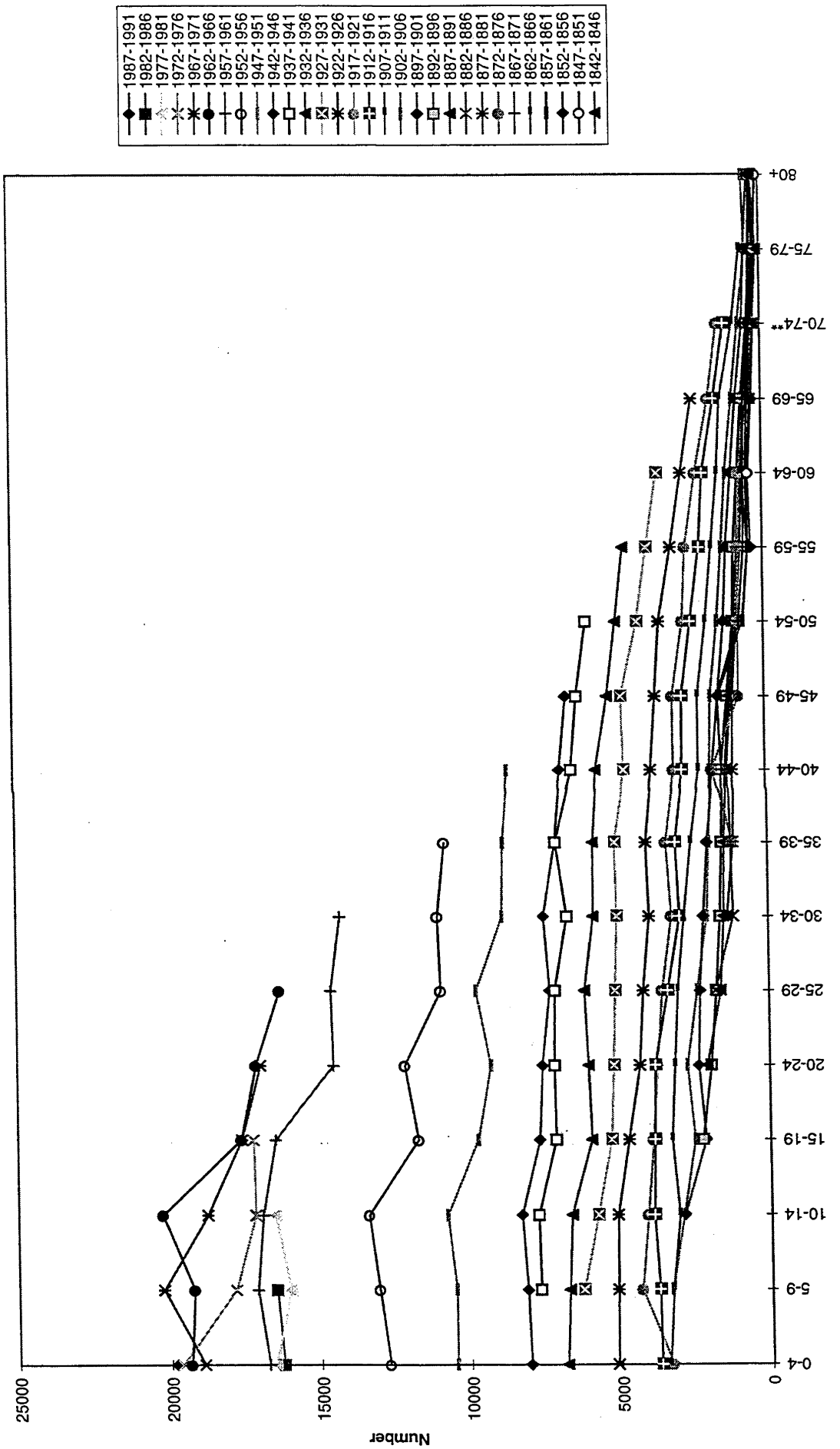
Notes: Until 1926, Maori data based on indirect estimation techniques.

Sources: Prior to 1926: Pool 1985 Figure 31;
Post-1926: Pool 1985, Tables 116 and 124; Pool 1990:41;
Demographic Trends 1993, Table 4.9

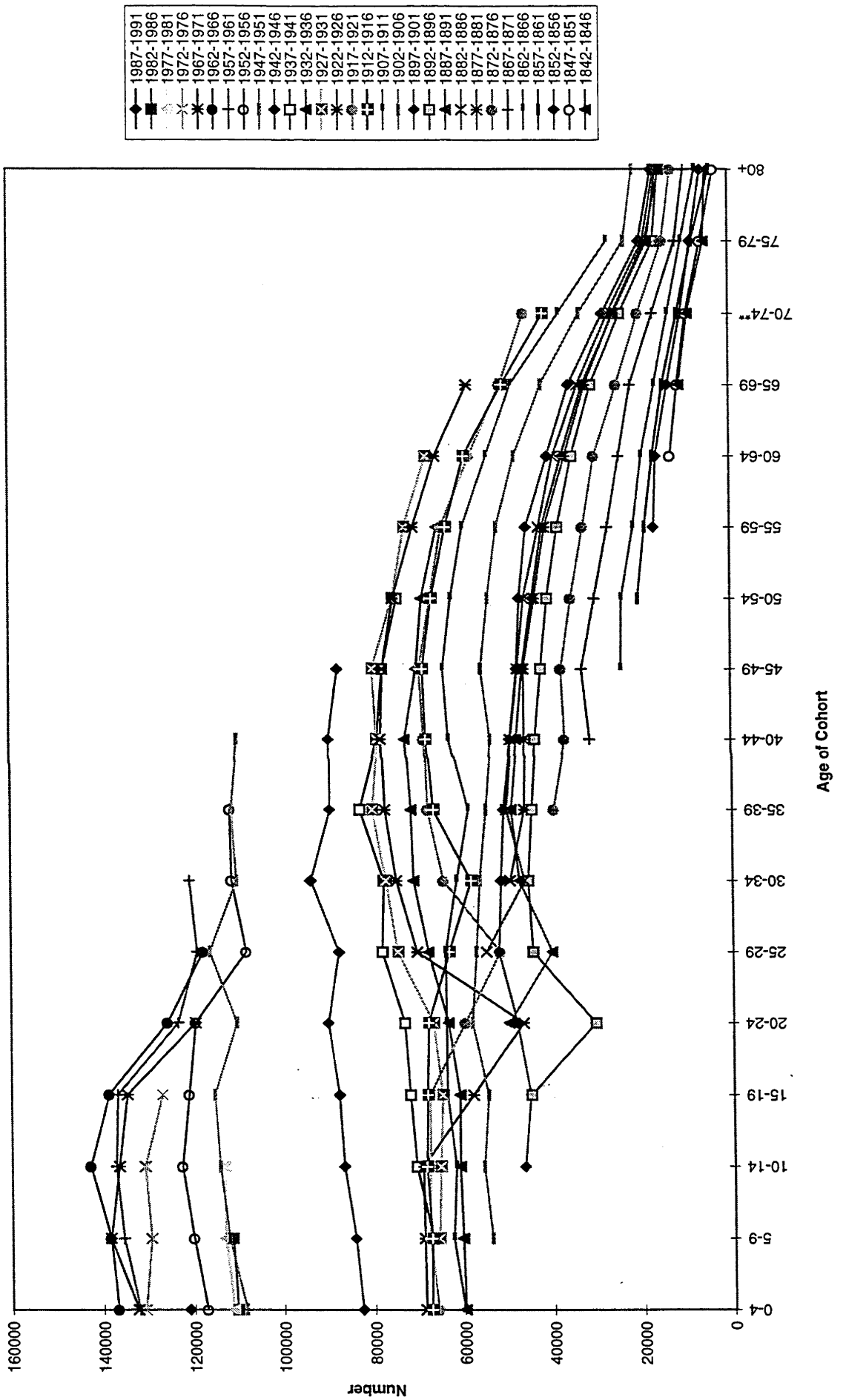
Appendix D.6.1: Cohort Size (Numbers) by Year of Birth and Age of Cohort, Maori Males, 1842-1991

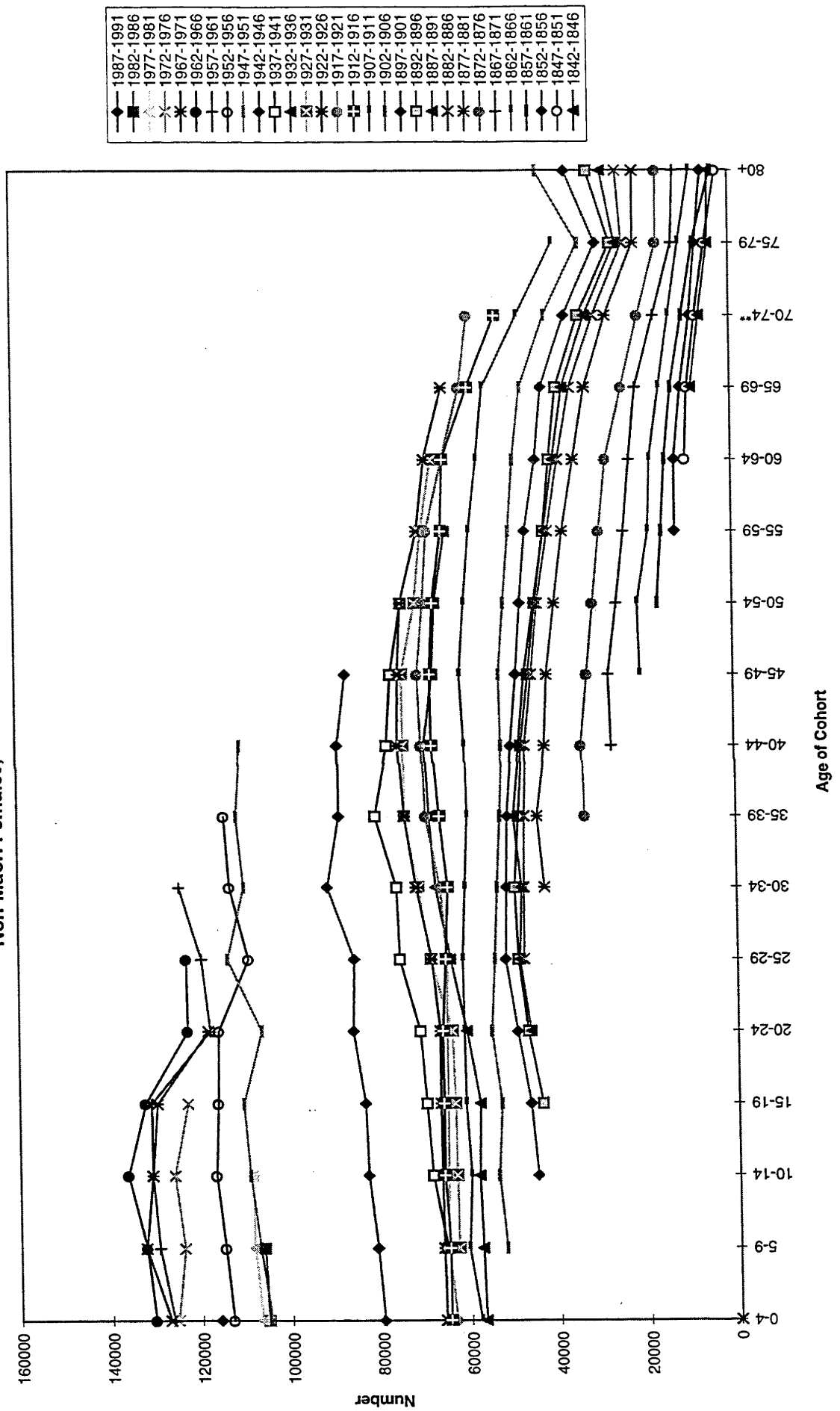


Appendix D.6.2: Cohort Size (Numbers) by Year of Birth and Age of Cohort, Maori Females, 1842-1991



Appendix D.6.3: Cohort Size (Numbers) by Year of Birth and Age of Cohort, Non-Maori Males, 1842-1991





Appendix D.6.4: Cohort Size (Numbers) by Year of Birth and Age of Cohort, Non-Maori Females, 1842-1991

APPENDIX E

APPENDIX E.1

Population, Labour Force Numbers and Full-time Labour Force Participation Rates (LFPR) for Sole/Single Origin Maori and Non-Maori Populations Aged 15+ Years, 1911-1991

	Population		Labour Force		LFPR	
Year	Males	Females	Males	Females	Males	Females
			NON-MAORI			
1911	370829	320944	355676	87638	95.9	27.3
1916	365892	368193	341617	95250	93.4	25.9
1921	428001	407251	399179	109135	93.3	26.8
1926	479935	460009	444401	111789	92.6	24.3
1936	560857	548571	504633	138584	90.0	25.3
1945	571533	617776	495477	167263	86.7	27.1
1951	650677	654749	542539	164626	83.4	25.1
1956	706274	710005	590787	185460	83.6	26.1
1961	761873	769348	633621	213924	83.2	27.8
1966	846794	857834	701896	265930	82.9	31.0
1971	907904	929245	734864	313073	80.9	33.7
1976	1014379	1039125	803525	379079	79.2	36.5
1981	1047213	1082010	806754	421407	77.0	38.9
1986	1114143	1160055	805269	424803	72.3	36.6
1991	1155906	1218279	750186	427692	64.9	35.1
			SOLE/SINGLE ORIGIN MAORI			
1926	19154	16953	11602	2838	60.6	16.7
1936	23967	21204	21940	3035	91.5	14.3
1945	26826	25832	...	...	...	...
1951	31884	29921	25816	6724	81.0	22.5
1956	37102	35457	31348	8418	84.5	23.7
1961	43252	41569	36885	10933	85.3	26.3
1966	50681	49211	43699	14514	86.2	29.5
1971	58440	57419	50105	20793	85.7	36.2
1976	73521	74153	61573	28156	83.7	38.0
1981	83127	84354	69852	34329	84.0	40.7
1986	96246	97857	71748	39096	74.5	40.0
1991	106182	109920	62766	35649	59.1	32.4

Notes: 1911-1976 = *De Facto* population, 1981-1991 = *De Jure* population

Source: 1911-1945: Reconstructed from Zodgekar 1985, Tables 241, 242 and 253, and results applied to Census populations.

1951-1991: *Census of Population and Dwellings*, various years.

APPENDIX E.2.1

Component Analysis of Ethnic Differentials in Full-Time Labour Force Participation Rates for Population Aged 15+ Years, by Sex and Ethnic Classification, 1951-1991

	1951	1956	1961	1966	1971	1976	1981	1986	1991
MALES									
Non-Maori LFPR	83.4	83.6	83.2	82.9	80.9	79.2	77.0	72.3	64.9
Maori LFPR	81.0	84.5	85.3	86.2	85.7	83.7	84.0	74.6	60.0
Non-Maori LFPR (Standardised*)	87.4	87.4	87.5	86.5	84.2	82.6	81.7	78.5	68.9
Maori LFPR (Standardised*)	76.6	79.8	79.8	81.7	80.9	78.8	77.6	67.5	56.9
Component of observed difference (Non-Maori minus Maori) due to:									
Participation level	6.61	3.37	2.77	0.77	-0.78	-0.37	-1.42	4.34	8.45
Age Structure	-4.20	-4.21	-4.88	-4.11	-4.02	-4.16	-5.57	-6.62	-3.56
Observed Differential	2.41	-0.84	-2.11	-3.33	-4.80	-4.54	-6.99	-2.28	4.88
FEMALES									
Non-Maori LFPR	25.1	26.1	27.8	31.0	33.7	36.5	38.9	36.6	35.0
Maori LFPR	22.5	23.7	26.3	29.5	36.2	38.0	40.7	40.0	33.8
Non-Maori LFPR (Standardised*)	35.1	35.4	35.3	37.4	40.4	44.0	47.3	44.9	41.2
Maori LFPR (Standardised*)	16.7	17.7	20.4	24.4	29.6	31.7	33.8	33.4	30.3
Component of observed difference (Non-Maori minus Maori) due to:									
Participation level	10.52	10.06	8.20	7.24	4.12	5.38	5.90	4.05	6.07
Age Structure	-7.85	-7.68	-6.70	-5.73	-6.64	-6.87	-7.66	-7.38	-4.83
Observed Differential	2.67	2.38	1.51	1.51	-2.52	-1.49	-1.76	-3.33	1.24

Notes: LFPR = Labour Force Participation Rate.

1951-1976 = *De Facto* population, 1981-1991 = *De Jure* population.

1951-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group.

Non-Maori = Total Population minus specified Maori classification.

*Maori standardised to age structure of non-Maori population, and vice-versa.

Source: Compiled from *Census of. Population and Dwellings*, various years (see Appendix E.2.2)

APPENDIX E.2.2

Age Specific Labour Force Participation Rates, by Sex and Ethnic Classification, Males, 1951-1991

	1951	1956	1961	1966	1971	1976	1981	1986	1991
NON-MAORI									
15-19*	72.5	68.5	65.5	62.5	56.1	55.3	55.2	52.5	34.9
20-24	96.1	95.9	94.4	93.4	90.6	90.8	90.4	85.8	76.1
25-34	98.0	98.6	98.6	98.6	98.3	98.0	97.2	92.2	86.2
35-44	97.8	98.3	98.4	99.0	98.8	98.6	97.8	93.7	88.4
45-54	95.8	97.1	97.5	97.6	97.4	97.1	96.4	91.8	86.5
55-64**	75.8	80.6	82.1	83.6	81.8	75.1	70.1	60.2	26.1
65+	26.7	25.2	22.1	23.6	21.3	16.2	11.2	7.1	...
Total	83.4	83.6	83.2	82.9	80.9	79.2	77.0	72.3	64.9
Standardised	87.4	87.4	87.5	86.5	84.2	82.6	81.7	78.5	68.9
MAORI									
15-19*	61.2	64.7	64.9	66.2	67.1	64.4	67.4	59.4	34.6
20-24	93.4	96.8	95.7	96.0	95.5	94.8	96.1	83.9	67.2
25-34	94.3	97.3	97.2	97.7	97.2	96.9	96.4	84.8	72.8
35-44	93.3	96.0	96.3	97.4	97.3	96.4	95.6	85.5	75.2
45-54	87.7	91.9	92.5	94.2	93.5	92.4	91.4	80.7	70.7
55-64**	63.8	70.6	69.3	76.9	75.0	69.8	65.9	53.7	27.6
65+	18.0	18.7	19.1	22.1	19.8	14.4	10.7	6.3	...
Total	81.0	84.5	85.3	86.2	85.7	83.7	84.0	74.6	60.0
Standardised	76.6	79.8	79.8	81.7	80.9	78.8	77.6	67.5	56.9

Age Specific Labour Force Participation Rates, by Sex and Ethnic Classification, Females, 1951-1991

	1951	1956	1961	1966	1971	1976	1981	1986	1991
NON-MAORI									
15-19*	67.2	66.2	65.6	63.1	56.9	51.4	49.3	46.0	29.2
20-24	54.4	52.1	51.3	54.3	56.0	60.7	66.2	67.0	61.0
25-34	22.8	22.2	21.1	23.9	29.6	36.0	41.5	41.9	43.9
35-44	21.0	23.1	25.7	29.7	37.7	46.5	52.3	46.3	47.7
45-54	21.2	25.2	28.9	32.5	38.0	43.9	49.0	45.7	49.2
55-64**	12.2	15.3	18.0	20.6	22.0	21.7	22.4	18.2	7.5
65+	3.3	3.6	3.4	3.7	3.5	2.7	1.9	1.3	...
Total	25.1	26.1	27.8	31.0	33.7	36.5	38.9	36.6	35.0
Standardised	35.1	35.4	35.3	37.4	40.4	44.0	47.3	44.9	41.2
MAORI									
15-19*	39.0	40.0	46.8	48.5	57.0	48.4	50.5	46.2	26.1
20-24	33.0	35.8	35.4	36.6	41.5	40.4	43.8	45.7	40.4
25-34	17.6	17.9	19.2	22.2	28.6	33.6	36.4	38.8	34.7
35-44	14.9	15.8	20.0	26.2	34.7	43.0	47.0	46.0	44.1
45-54	14.1	15.5	21.6	25.4	31.4	37.5	42.2	41.7	40.9
55-64**	9.4	10.5	9.9	14.3	17.8	19.6	20.5	19.8	11.5
65+	1.8	2.7	1.6	2.9	2.2	3.0	2.3	1.6	...
Total	22.5	23.7	26.3	29.5	36.2	38.0	40.7	40.0	33.8
Standardised	16.7	17.7	20.4	24.4	29.6	31.7	33.8	33.4	30.3

Notes: *Data for 1951 and 1956 refer to population aged less than 20 years.

**Data for 1991 refer to population aged 55+ years.

1951-1976 = *De Facto* population, 1981-1991 = *De Jure* population.

1951-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group.

Non-Maori = Total Population minus specific Maori classification.

Maori data standardised to Non-Maori age structure, by sex, and vice-versa

Source: Compiled from *Census of Population and Dwellings,* various years (see Appendix E.2.3)

APPENDIX E.2.3

2.3.1: Labour Force (Numbers at Each Age), by Ethnic Classification, Males, 1951-1991

	1951	1956	1961	1966	1971	1976	1981	1986	1991
NON-MAORI									
15-19*	44032	49132	57373	72002	67854	75635	76269	70668	41883
20-24	63909	60641	68846	84049	99911	108535	111375	107970	87653
25-34	131366	146880	142319	146358	162012	205630	211935	212220	199902
35-44	125995	132874	142771	155894	147949	152850	164058	188034	192171
45-54	97958	114139	126883	132024	139875	149728	139278	133776	137595
55-64**	57097	64512	75626	89556	95632	92305	89601	82680	74658
65+	22182	22609	19803	22013	21631	18842	14244	9906	...
Total	542539	590787	633621	701896	734864	803525	806760	805254	733862
MAORI									
15-19*	3817	4716	5023	6667	8119	10706	12522	10875	8640
20-24	4865	5766	6836	7106	8775	11494	13704	14478	13965
25-34	6895	8748	10809	12759	13545	16157	18555	20814	25335
35-44	5376	5946	6920	8598	10236	12156	12603	12993	17085
45-54	3192	4119	4947	5421	5991	7471	8802	8967	10206
55-64**	1392	1727	2000	2692	2978	3180	3321	3411	3864
65+	279	326	350	456	461	409	342	219	...
Total	25816	31348	36885	43699	50105	61573	69849	71757	79095

2.3.2: Labour Force (Numbers at Each Age), by Ethnic Classification, Females, 1951-1991

	1951	1956	1961	1966	1971	1976	1981	1986	1991
NON-MAORI									
15-19*	38731	46042	54639	69651	65942	67324	65097	59661	33606
20-24	34672	31477	36357	46563	59517	70311	77766	82245	69006
25-34	30570	31042	28446	34007	47692	73724	90798	97497	105063
35-44	26462	31589	36901	44220	53576	69546	86646	92556	104835
45-54	21169	28287	36902	44652	54682	65055	67575	65274	77790
55-64**	9973	13269	16795	22152	26800	28788	30123	25044	25734
65+	3049	3754	3884	4685	4864	4331	3396	2532	...
Total	164626	185460	213924	265930	313073	379079	421401	424809	416034
MAORI									
15-19*	2316	2847	3585	4707	6656	7971	9039	8124	6498
20-24	1709	2157	2527	2758	3850	4895	6462	7818	8916
25-34	1296	1616	2140	2868	3995	5773	7278	9924	13455
35-44	780	969	1416	2325	3630	5456	6405	7203	10593
45-54	435	579	1006	1390	1980	3085	3993	4665	6066
55-64**	163	211	235	414	636	888	1083	1296	1776
65+	25	39	24	52	46	88	75	66	...
Total	6724	8418	10933	14514	20793	28156	34335	39096	47304

Notes: *Data for 1951 and 1956 refer to population aged less than 20 years.
**Data for 1991 refer to population aged 55+ years.
1951-1976 = *De Facto* population, 1981-1991 = *De Jure* population.
1951-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group.
Non-Maori = Total Population minus specific Maori classification.

Source: Compiled from *Census of Population and Dwellings,* various years

APPENDIX E.2.3 (continued)

2.3.3: Population Age Structure (Numbers at Each Age), by Ethnic Classification, Males, 1951-1991

	1951	1956	1961	1966	1971	1976	1981	1986	1991
NON-MAORI									
15-19*	60697	71692	87587	115255	121016	136706	138243	134625	120015
20-24	66508	63225	72897	89990	110257	119517	123162	125790	115182
25-34	134075	148965	144403	148392	164871	209842	218052	230253	231990
35-44	128775	135191	145072	157469	149729	155012	167772	200664	217491
45-54	102222	117555	130162	135297	143614	154244	144528	145653	159075
55-64**	75338	80089	92112	107095	116891	122916	127827	137454	286593
65+	83062	89557	89640	93296	101526	116142	127632	139707	...
Total	650677	706274	761873	846794	907904	1014379	1047216	1114146	1130346
MAORI									
15-19*	6234	7293	7737	10071	12100	16629	18573	18300	24987
20-24	5208	5955	7146	7404	9190	12127	14262	17262	20796
25-34	7310	8987	11120	13064	13932	16673	19245	24534	34824
35-44	5760	6194	7184	8827	10519	12604	13188	15195	22719
45-54	3638	4482	5348	5753	6406	8083	9630	11118	14430
55-64**	2183	2446	2885	3501	3970	4555	5040	6348	13980
65+	1551	1745	1832	2061	2323	2850	3189	3489	...
Total	31884	37102	43252	50681	58440	73521	83127	96246	131736

2.3.4: Population Age Structure (Numbers at Each Age), by Ethnic Classification, Females, 1951-1991

	1951	1956	1961	1966	1971	1976	1981	1986	1991
NON-MAORI									
15-19*	57644	69550	83228	110334	115991	130930	131913	129570	115065
20-24	63781	60474	70878	85715	106226	115823	117450	122730	113058
25-34	134110	139832	134982	142253	161220	204920	218745	232686	239151
35-44	126304	136490	143546	148911	142161	149430	165804	199938	219885
45-54	99807	112212	127476	137274	143833	148030	137814	142737	158202
55-64**	81639	86606	93555	107405	121606	132404	134640	137637	342774
65+	91464	104841	115683	125942	138208	157588	175650	194751	...
Total	654749	710005	769348	857834	929245	1039125	1082016	1160049	1188135
MAORI									
15-19*	5939	7110	7667	9707	11682	16472	17904	17598	24921
20-24	5176	6017	7142	7543	9286	12108	14769	17112	22059
25-34	7357	9031	11167	12933	13979	17203	19977	25599	38736
35-44	5252	6121	7064	8862	10476	12682	13635	15663	24033
45-54	3075	3724	4650	5468	6313	8222	9471	11178	14844
55-64**	1740	2002	2385	2904	3573	4539	5277	6546	15471
65+	1382	1452	1494	1794	2110	2927	3318	4161	...
Total	29921	35457	41569	49211	57419	74153	84351	97857	140064

Notes: *Data for 1951 and 1956 refer to population aged less than 20 years.
**Data for 1991 refer to population aged 55+ years.
1951-1976 = *De Facto* population, 1981-1991 = *De Jure* population.
1951-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group.
Non-Maori = Total Population minus specific Maori classification.

Source: Compiled from *Census of Population and Dwellings,* various years

APPENDIX E.3

Labour Force Status: Percentage of Population Aged 15 + Years in Each Category, by Sex and Ethnic Classification, and Index of Ethnic Dissimilarity, 1951-1991.

	1951	1956	1961	1966	1971	1976	1981	1986	1991
					MALES				
NON-MAORI									
Employed	82.19	83.06	82.59	82.23	79.93	77.83	74.18	73.37	63.76
Unemployed	1.12	0.64	0.50	0.53	0.77	1.11	2.47	3.44	6.19
Not in Labour Force	16.69	16.30	16.90	17.24	19.30	21.06	23.35	23.18	30.06
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	650677	706274	761873	846794	907904	1014379	1048215	1114155	1130346
Not Employed	17.81	16.94	17.41	17.77	20.07	22.17	25.82	26.63	36.24
MAORI									
Employed	78.85	81.71	83.04	84.64	82.20	79.16	74.25	71.35	49.62
Unemployed	2.01	2.77	1.96	1.25	3.01	4.25	10.51	10.30	15.79
Not in Labour Force	19.14	15.52	15.00	14.11	14.79	16.58	15.25	18.35	34.59
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	31884	37102	43252	50681	58440	73521	82125	96246	131739
Not Employed	21.15	18.29	16.96	15.36	17.80	20.84	25.75	28.65	50.38
					FEMALES				
NON-MAORI									
Employed	24.87	25.84	27.55	30.54	33.02	35.51	36.96	48.65	46.26
Unemployed	0.24	0.29	0.25	0.38	0.59	0.88	1.83	4.32	4.78
Not in Labour Force	74.89	73.86	72.21	69.07	66.38	63.61	61.21	47.03	48.96
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	654749	710005	769348	857834	929245	1039125	1082937	1160052	1188138
Not Employed	75.13	74.16	72.45	69.46	66.98	64.49	63.04	51.35	53.74
MAORI									
Employed	21.98	22.84	25.49	27.79	32.67	34.12	33.85	42.96	34.54
Unemployed	0.42	0.89	0.76	1.40	3.32	3.78	7.15	11.00	11.60
Not in Labour Force	77.60	76.26	73.75	70.81	64.01	62.10	59.00	46.04	53.85
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	29921	35457	41569	49211	57419	74153	83430	97857	140061
Not Employed	78.02	77.16	74.51	72.21	67.33	65.88	66.15	57.04	65.46
INDEX OF DISSIMILARITY									
Males	3.34	2.13	1.90	3.13	4.51	4.47	8.11	6.86	14.13
Females	2.89	3.00	2.06	2.75	2.72	2.90	5.32	6.68	11.71

Notes: 1951-1986 denotes Sole/Single Origin Maori; 1991 denotes Maori Ethnic Group.
Non-Maori denotes total population minus specific Maori classification.
1951-1981 = Full Time only, 1986-1991 = Full Time + Part Time.

Source: Compiled from the *Census of Population and Dwellings,* various years.

APPENDIX E.4

Component Analysis of Ethnic Differentials in Labour Force Status, Maori and European Populations Aged 15-64 Years, by Sex, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
FULL TIME								
European	84.73	82.99	80.04	70.10	34.71	36.57	41.74	39.59
Maori	80.19	76.21	68.86	47.65	33.31	33.10	36.43	27.00
European (Standardised*)	82.12	80.84	78.82	67.63	38.51	40.56	45.22	40.32
Maori (Standardised*)	81.72	77.76	69.59	49.75	31.45	31.88	35.40	28.06
Component of observed difference (European minus Maori) due to:								
Underlying Differential	2.47	4.93	10.21	20.17	4.26	6.08	7.58	12.34
Age Structure	2.08	1.85	0.97	2.28	-2.85	-2.61	-2.28	0.25
Observed Differential	4.55	6.78	11.18	22.46	1.41	3.47	5.31	12.59
PART TIME								
European	1.79	2.59	3.82	5.03	14.20	17.42	17.28	18.59
Maori	1.16	1.87	5.88	4.71	7.63	9.73	10.40	9.76
European (Standardised*)	2.04	2.95	4.02	5.48	13.28	16.01	15.84	17.55
Maori (Standardised*)	1.13	1.78	6.02	4.72	8.00	10.28	10.96	10.30
Component of observed difference (European minus Maori) due to:								
Underlying Differential	0.77	0.94	-2.03	0.54	5.90	6.69	5.84	8.03
Age Structure	-0.14	-0.22	-0.03	-0.22	0.67	1.00	1.04	0.80
Observed Differential	0.63	0.72	-2.07	0.32	6.57	7.69	6.88	8.83
UNEMPLOYED								
European	1.12	2.50	3.57	6.87	0.93	1.99	4.90	5.65
Maori	4.02	9.61	10.19	16.38	3.60	6.72	11.09	12.11
European (Standardised*)	1.30	2.98	4.57	8.12	1.26	2.67	5.93	6.89
Maori (Standardised*)	3.38	7.94	8.34	14.49	2.48	4.74	9.14	10.23
Component of observed difference (European minus Maori) due to:								
Underlying Differential	-2.49	-6.03	-5.19	-7.94	-1.94	-3.38	-4.67	-4.87
Age Structure	-0.41	-1.07	-1.43	-1.57	-0.73	-1.35	-1.52	-1.60
Observed Differential	-2.91	-7.11	-6.62	-9.52	-2.67	-4.73	-6.19	-6.47
NOT IN THE LABOUR FORCE								
European	12.36	11.92	12.57	18.00	50.15	44.02	36.09	36.18
Maori	14.63	12.31	15.07	31.26	55.47	50.45	42.08	51.13
European (Standardised*)	14.54	13.23	12.59	18.76	46.96	40.77	33.01	35.23
Maori (Standardised*)	13.76	12.51	16.05	31.04	58.07	53.09	44.50	51.41
Component of observed difference (European minus Maori) due to:								
Underlying Differential	-0.75	0.16	-2.98	-12.77	-8.22	-9.39	-8.75	-15.50
Age Structure	-1.52	-0.55	0.49	-0.49	2.91	2.96	2.76	0.55
Observed Differential	-2.28	-0.39	-2.49	-13.26	-5.32	-6.43	-5.99	-14.95

Notes: *Maori standardised to age structure of European population aged 15-64 years, and vice-versa.

Source: Database A (see Appendix E.5)

APPENDIX E.5.1

5.1.1: Full-Time Employment, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	63708	61893	55839	30918	55371	49545	46332	24081
20-24	91491	93279	91626	69069	57771	63087	69903	55569
25-29	98706	89151	95022	79485	30336	34323	47469	48348
30-34	82074	95142	91251	87063	20802	28056	35577	37716
35-39	73158	78636	94701	83292	23367	28311	42750	41058
40-44	64527	69585	77145	85611	23067	29346	39591	50340
45-49	71358	62175	66321	68652	24894	25311	34293	40836
50-54	66384	66270	57723	55812	22413	22809	25110	29550
55-59	53382	57756	56334	41904	14901	16401	17673	16407
60-64	30879	23964	21771	17979	6696	5553	5616	5262
Total	695667	697851	707733	619785	279618	302742	364314	349167
MAORI ETHNIC GROUP								
15-19	11826	12384	10857	4929	8064	7737	8241	3594
20-24	13830	16056	15915	9642	5859	7434	8919	6381
25-29	11328	12588	13596	10089	3447	4143	6216	5247
30-34	8424	10452	10617	9447	2838	3777	5019	4980
35-39	7986	7734	8769	7815	3180	3543	4704	4749
40-44	6234	7266	6591	6564	2646	3393	3759	4284
45-49	5229	5769	5946	4764	2103	2589	3318	3066
50-54	3675	4446	4431	3999	1350	1767	2139	2313
55-59	2562	2964	3093	2445	717	945	1245	1230
60-64	1266	1092	951	729	300	261	324	348
Total	72360	80751	80766	60423	30504	35589	43884	36192

5.1.2: Full-Time Employment as Percentage of Population, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	51.70	50.52	47.52	28.91	47.12	42.63	41.33	23.55
20-24	86.85	85.64	82.99	67.59	56.34	60.98	65.58	56.13
25-29	94.56	93.14	89.97	79.36	29.47	35.46	45.05	46.83
30-34	96.15	95.31	91.90	83.31	24.89	28.07	35.20	35.27
35-39	96.58	95.85	93.16	84.88	31.57	34.74	41.97	40.98
40-44	96.34	95.96	93.43	86.27	35.89	40.88	48.45	50.50
45-49	95.94	95.15	92.69	85.82	35.98	40.26	48.38	51.42
50-54	94.37	93.06	90.13	81.73	32.42	34.00	40.47	43.21
55-59	88.75	85.78	82.13	68.99	23.60	24.52	26.93	27.50
60-64	56.05	43.21	34.58	28.11	11.32	9.05	8.57	8.32
Total	84.73	82.99	80.04	70.10	34.71	36.57	41.74	39.59
Standardised	82.12	80.84	78.82	67.63	38.51	40.56	45.22	40.32
MAORI ETHNIC GROUP								
15-19	54.10	48.81	43.67	19.70	36.94	31.24	33.58	14.41
20-24	86.62	82.48	72.42	46.35	36.12	36.83	39.79	28.92
25-29	91.30	87.18	77.87	53.70	26.91	27.76	33.27	25.27
30-34	92.46	89.45	79.82	58.90	30.21	31.74	35.99	27.74
35-39	92.85	89.70	81.88	62.07	36.41	39.05	42.48	35.41
40-44	92.40	89.97	81.98	64.70	38.79	41.73	44.93	40.37
45-49	91.59	87.65	80.41	63.22	36.04	40.05	43.91	38.90
50-54	86.88	84.35	75.20	58.18	31.32	33.09	36.14	33.22
55-59	81.88	77.80	67.92	46.60	22.42	24.16	26.52	22.79
60-64	51.03	41.41	30.72	19.29	12.32	9.21	9.95	8.54
Total	80.19	76.21	68.86	47.65	33.31	33.10	36.43	27.00
Standardised	81.72	77.76	69.59	49.75	31.45	31.88	35.40	28.06

APPENDIX E.5.1 (Continued)

5.1.3: Part-Time Employment, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	5970	8943	9003	13149	6630	10128	10470	15354
20-24	1890	2244	3564	4191	6555	7089	7092	7983
25-29	1062	1287	3051	3351	14145	15348	15516	14157
30-34	564	1092	2736	3324	17847	25734	24429	25050
35-39	387	792	2544	3240	18225	23613	28371	27366
40-44	360	609	2010	3183	15036	19509	21150	25239
45-49	456	630	1929	2802	13836	15057	16647	18267
50-54	606	987	1962	2841	10935	13617	12738	14955
55-59	1002	1527	2724	3372	7260	9543	9909	10248
60-64	2394	3642	4218	5049	3936	4611	4479	5310
Total	14691	21753	33741	44502	114405	144249	150801	163929
MAORI ETHNIC GROUP								
15-19	456	861	1452	1527	666	1290	1638	1968
20-24	180	285	1131	822	816	1200	1359	1278
25-29	75	162	987	714	1191	1689	2049	1794
30-34	51	141	762	672	1128	1884	2034	2118
35-39	51	111	657	543	1128	1380	1779	1812
40-44	45	102	456	483	843	1176	1269	1428
45-49	33	90	516	357	555	861	1104	1065
50-54	39	75	438	384	378	537	753	858
55-59	39	60	348	297	198	330	411	534
60-64	75	96	153	174	84	120	132	225
Total	1044	1983	6900	5973	6987	10467	12528	13080

5.1.4: Part-Time Employment as Percentage of Population, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	4.84	7.30	7.66	12.30	5.64	8.71	9.34	15.01
20-24	1.79	2.06	3.23	4.10	6.39	6.85	6.65	8.06
25-29	1.02	1.34	2.89	3.35	13.74	15.86	14.73	13.71
30-34	0.66	1.09	2.76	3.18	21.35	25.75	24.17	23.43
35-39	0.51	0.97	2.50	3.30	24.62	28.98	27.85	27.31
40-44	0.54	0.84	2.43	3.21	23.39	27.18	25.88	25.32
45-49	0.61	0.96	2.70	3.50	20.00	23.95	23.49	23.00
50-54	0.86	1.39	3.06	4.16	15.82	20.30	20.53	21.87
55-59	1.67	2.27	3.97	5.55	11.50	14.27	15.10	17.18
60-64	4.35	6.57	6.70	7.90	6.65	7.51	6.83	8.40
Total	1.79	2.59	3.82	5.03	14.20	17.42	17.28	18.59
Standardised	2.04	2.95	4.02	5.48	13.28	16.01	15.84	17.55
MAORI ETHNIC GROUP								
15-19	2.09	3.39	5.84	6.10	3.05	5.21	6.67	7.89
20-24	1.13	1.46	5.15	3.95	5.03	5.94	6.06	5.79
25-29	0.60	1.12	5.65	3.80	9.30	11.32	10.97	8.64
30-34	0.56	1.21	5.73	4.19	12.01	15.83	14.58	11.80
35-39	0.59	1.29	6.13	4.31	12.92	15.21	16.07	13.51
40-44	0.67	1.26	5.67	4.76	12.36	14.46	15.17	13.46
45-49	0.58	1.37	6.98	4.74	9.51	13.32	14.61	13.51
50-54	0.92	1.42	7.43	5.59	8.77	10.06	12.72	12.32
55-59	1.25	1.57	7.64	5.66	6.19	8.44	8.75	9.89
60-64	3.02	3.64	4.94	4.60	3.45	4.23	4.06	5.52
Total	1.16	1.87	5.88	4.71	7.63	9.73	10.40	9.76
Standardised	1.13	1.78	6.02	4.72	8.00	10.28	10.96	10.30

APPENDIX E.5.1 (Continued)

5.1.5: Unemployment, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	2331	5397	12270	12789	3384	6834	13041	12831
20-24	2109	4842	6411	12885	1785	3771	6747	10026
25-29	1272	2889	3399	8694	771	1629	5118	6411
30-34	708	1878	2118	6537	369	990	4896	5433
35-39	477	1179	1635	5061	285	741	4416	4632
40-44	465	1029	1191	4491	255	702	2946	3990
45-49	579	1017	1017	3429	258	729	2226	2886
50-54	606	1257	1068	3264	222	615	1710	2127
55-59	489	1392	1599	2949	126	384	1203	1221
60-64	138	138	828	621	24	48	432	237
Total	9174	21018	31536	60720	7479	16443	42735	49794
MAORI ETHNIC GROUP								
15-19	1569	4029	4623	4623	2253	4515	4614	4338
20-24	792	2403	2952	4797	618	1452	3069	3696
25-29	372	1305	1584	3684	216	480	2049	2817
30-34	252	747	906	2637	60	261	1347	2100
35-39	177	480	564	1719	57	159	861	1311
40-44	132	414	432	1218	36	153	537	864
45-49	135	315	303	858	21	96	426	576
50-54	114	285	300	726	21	54	273	348
55-59	78	189	210	444	6	54	144	165
60-64	9	12	75	72	6	0	39	24
Total	3630	10179	11949	20778	3294	7224	13359	16239

5.1.6: Unemployment as Percentage of Population, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	1.89	4.41	10.44	11.96	2.88	5.88	11.63	12.55
20-24	2.00	4.45	5.81	12.61	1.74	3.65	6.33	10.13
25-29	1.22	3.02	3.22	8.68	0.75	1.68	4.86	6.21
30-34	0.83	1.88	2.13	6.26	0.44	0.99	4.84	5.08
35-39	0.63	1.44	1.61	5.16	0.39	0.91	4.34	4.62
40-44	0.69	1.42	1.44	4.53	0.40	0.98	3.60	4.00
45-49	0.78	1.56	1.42	4.29	0.37	1.16	3.14	3.63
50-54	0.86	1.77	1.67	4.78	0.32	0.92	2.76	3.11
55-59	0.81	2.07	2.33	4.86	0.20	0.57	1.83	2.05
60-64	0.25	0.25	1.32	0.97	0.04	0.08	0.66	0.37
Total	1.12	2.50	3.57	6.87	0.93	1.99	4.90	5.65
Standardised	1.30	2.98	4.57	8.12	1.26	2.67	5.93	6.89
MAORI ETHNIC GROUP								
15-19	7.18	15.88	18.60	18.48	10.32	18.23	18.80	17.40
20-24	4.96	12.34	13.43	23.06	3.81	7.19	13.69	16.75
25-29	3.00	9.04	9.07	19.61	1.69	3.22	10.97	13.57
30-34	2.77	6.39	6.81	16.44	0.64	2.19	9.66	11.70
35-39	2.06	5.57	5.27	13.65	0.65	1.75	7.78	9.78
40-44	1.96	5.13	5.37	12.00	0.53	1.88	6.42	8.14
45-49	2.36	4.79	4.10	11.39	0.36	1.48	5.64	7.31
50-54	2.70	5.41	5.09	10.56	0.49	1.01	4.61	5.00
55-59	2.49	4.96	4.61	8.46	0.19	1.38	3.07	3.06
60-64	0.36	0.46	2.42	1.90	0.25	0.00	1.20	0.59
Total	4.02	9.61	10.19	16.38	3.60	6.72	11.09	12.11
Standardised	3.38	7.94	8.34	14.49	2.48	4.74	9.14	10.23

APPENDIX E.5.1 (Continued)

5.1.7: Not in the Labour Force, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	51219	46284	40398	50076	52134	49722	42270	50001
20-24	9849	8559	8808	16044	36438	29508	22851	25416
25-29	3339	2388	4149	8631	57684	45489	37266	34326
30-34	2016	1707	3186	7578	44556	45171	36159	38724
35-39	1725	1437	2778	6537	32136	28818	26328	27135
40-44	1629	1290	2220	5955	25917	22230	18036	20106
45-49	1986	1524	2283	5109	30192	21774	17715	17424
50-54	2751	2700	3288	6375	35559	30036	22488	21759
55-59	5277	6654	7938	12513	40863	40548	36846	31776
60-64	21678	27714	36135	40302	48489	51147	55035	52419
Total	101469	100257	111183	159120	403968	364443	314994	319086
MAORI ETHNIC GROUP								
15-19	8007	8097	7929	13935	10845	11226	10050	15033
20-24	1164	723	1977	5541	8928	10101	9066	10707
25-29	633	384	1293	4302	7956	8613	8370	10902
30-34	384	345	1017	3282	5367	5979	5547	8757
35-39	387	297	720	2514	4368	3990	3729	5538
40-44	336	294	561	1881	3297	3408	2802	4035
45-49	312	408	630	1557	3156	2919	2709	3174
50-54	402	465	723	1764	2562	2982	2754	3444
55-59	450	597	903	2061	2277	2583	2895	3468
60-64	1131	1437	1917	2805	2046	2454	2760	3477
Total	13206	13047	17670	39642	50802	54255	50682	68535

5.1.8 Not in the Labour Force as Percentage of Population, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	41.56	37.78	34.38	46.83	44.36	42.78	37.70	48.89
20-24	9.35	7.86	7.98	15.70	35.53	28.52	21.44	25.67
25-29	3.20	2.49	3.93	8.62	56.04	47.00	35.37	33.25
30-34	2.36	1.71	3.21	7.25	53.31	45.19	35.78	36.22
35-39	2.28	1.75	2.73	6.66	43.42	35.37	25.85	27.08
40-44	2.43	1.78	2.69	6.00	40.32	30.97	22.07	20.17
45-49	2.67	2.33	3.19	6.39	43.64	34.63	24.99	21.94
50-54	3.91	3.79	5.13	9.33	51.44	44.78	36.24	31.82
55-59	8.77	9.88	11.57	20.60	64.71	60.63	56.14	53.27
60-64	39.35	49.97	57.40	63.02	81.98	83.36	83.94	82.90
Total	12.36	11.92	12.57	18.00	50.15	44.02	36.09	36.18
Standardised	14.54	13.23	12.59	18.76	46.96	40.77	33.01	35.23
MAORI ETHNIC GROUP								
15-19	36.63	31.91	31.89	55.71	49.68	45.32	40.95	60.29
20-24	7.29	3.71	9.00	26.64	55.04	50.04	40.45	48.53
25-29	5.10	2.66	7.41	22.90	62.11	57.71	44.80	52.51
30-34	4.21	2.95	7.65	20.46	57.14	50.24	39.77	48.77
35-39	4.50	3.44	6.72	19.97	50.02	43.98	33.68	41.30
40-44	4.98	3.64	6.98	18.54	48.33	41.92	33.49	38.03
45-49	5.47	6.20	8.52	20.66	54.09	45.15	35.85	40.27
50-54	9.50	8.82	12.27	25.67	59.43	55.84	46.53	49.46
55-59	14.38	15.67	19.83	39.28	71.20	66.03	61.66	64.26
60-64	45.59	54.49	61.92	74.21	83.99	86.56	84.79	85.35
Total	14.63	12.31	15.07	31.26	55.47	50.45	42.08	51.13
Standardised	13.76	12.51	16.05	31.04	58.07	53.09	44.50	51.41

APPENDIX E.5.1 (Continued)

5.1.9: Population, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	123228	122517	117510	106932	117519	116229	112113	102267
20-24	105339	108924	110409	102189	102549	103455	106593	98994
25-29	104379	95715	105621	100161	102936	96789	105369	103242
30-34	85362	99819	99291	104502	83574	99951	101061	106923
35-39	75747	82044	101658	98130	74013	81483	101865	100191
40-44	66981	72513	82566	99240	64275	71787	81723	99675
45-49	74379	65346	71550	79992	69180	62871	70881	79413
50-54	70347	71214	64041	68292	69129	67077	62046	68391
55-59	60150	67329	68595	60738	63150	66876	65631	59652
60-64	55089	55458	62952	63951	59145	61359	65562	63228
Total	821001	840879	884193	884127	805470	827877	872844	881976
MAORI ETHNIC GROUP								
15-19	21858	25371	24861	25014	21828	24768	24543	24933
20-24	15966	19467	21975	20802	16221	20187	22413	22062
25-29	12408	14439	17460	18789	12810	14925	18684	20760
30-34	9111	11685	13302	16038	9393	11901	13947	17955
35-39	8601	8622	10710	12591	8733	9072	11073	13410
40-44	6747	8076	8040	10146	6822	8130	8367	10611
45-49	5709	6582	7395	7536	5835	6465	7557	7881
50-54	4230	5271	5892	6873	4311	5340	5919	6963
55-59	3129	3810	4554	5247	3198	3912	4695	5397
60-64	2481	2637	3096	3780	2436	2835	3255	4074
Total	90240	105960	117285	126816	91587	107535	120453	134046

5.1.10: Population Age Structure, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	0.15	0.15	0.13	0.12	0.15	0.14	0.13	0.12
20-24	0.13	0.13	0.12	0.12	0.13	0.12	0.12	0.11
25-29	0.13	0.11	0.12	0.11	0.13	0.12	0.12	0.12
30-34	0.10	0.12	0.11	0.12	0.10	0.12	0.12	0.12
35-39	0.09	0.10	0.11	0.11	0.09	0.10	0.12	0.11
40-44	0.08	0.09	0.09	0.11	0.08	0.09	0.09	0.11
45-49	0.09	0.08	0.08	0.09	0.09	0.08	0.08	0.09
50-54	0.09	0.08	0.07	0.08	0.09	0.08	0.07	0.08
55-59	0.07	0.08	0.08	0.07	0.08	0.08	0.08	0.07
60-64	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.07
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MAORI ETHNIC GROUP								
15-19	0.24	0.24	0.21	0.20	0.24	0.23	0.20	0.19
20-24	0.18	0.18	0.19	0.16	0.18	0.19	0.19	0.16
25-29	0.14	0.14	0.15	0.15	0.14	0.14	0.16	0.15
30-34	0.10	0.11	0.11	0.13	0.10	0.11	0.12	0.13
35-39	0.10	0.08	0.09	0.10	0.10	0.08	0.09	0.10
40-44	0.07	0.08	0.07	0.08	0.07	0.08	0.07	0.08
45-49	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
50-54	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
55-59	0.03	0.04	0.04	0.04	0.03	0.04	0.04	0.04
60-64	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

APPENDIX E.5.2

5.2.1: Employment, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	69678	70836	64842	44067	62001	59673	56802	39435
20-24	93381	95523	95190	73260	64326	70176	76995	63552
25-29	99768	90438	98073	82836	44481	49671	62985	62505
30-34	82638	96234	93987	90387	38649	53790	60006	62766
35-39	73545	79428	97245	86532	41592	51924	71121	68424
40-44	64887	70194	79155	88794	38103	48855	60741	75579
45-49	71814	62805	68250	71454	38730	40368	50940	59103
50-54	66990	67257	59685	58653	33348	36426	37848	44505
55-59	54384	59283	59058	45276	22161	25944	27582	26655
60-64	33273	27606	25989	23028	10632	10164	10095	10572
Total	710358	719604	741474	664287	394023	446991	515115	513096
MAORI ETHNIC GROUP								
15-19	12282	13245	12309	6456	8730	9027	9879	5562
20-24	14010	16341	17046	10464	6675	8634	10278	7659
25-29	11403	12750	14583	10803	4638	5832	8265	7041
30-34	8475	10593	11379	10119	3966	5661	7053	7098
35-39	8037	7845	9426	8358	4308	4923	6483	6561
40-44	6279	7368	7047	7047	3489	4569	5028	5712
45-49	5262	5859	6462	5121	2658	3450	4422	4131
50-54	3714	4521	4869	4383	1728	2304	2892	3171
55-59	2601	3024	3441	2742	915	1275	1656	1764
60-64	1341	1188	1104	903	384	381	456	573
Total	73404	82734	87666	66396	37491	46056	56412	49272

5.2.2: Employment as Percentage of Labour Force, by Sex, Ethnicity and Age, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
EUROPEAN								
15-19	96.76	92.92	84.09	77.51	94.82	89.72	81.33	75.45
20-24	97.79	95.18	93.69	85.04	97.30	94.90	91.94	86.37
25-29	98.74	96.90	96.65	90.50	98.30	96.82	92.48	90.70
30-34	99.15	98.09	97.80	93.26	99.05	98.19	92.46	92.03
35-39	99.36	98.54	98.35	94.47	99.32	98.59	94.15	93.66
40-44	99.29	98.56	98.52	95.19	99.34	98.58	95.37	94.99
45-49	99.20	98.41	98.53	95.42	99.34	98.23	95.81	95.34
50-54	99.10	98.17	98.24	94.73	99.34	98.34	95.68	95.44
55-59	99.11	97.71	97.36	93.88	99.43	98.54	95.82	95.62
60-64	99.59	99.50	96.91	97.37	99.77	99.53	95.90	97.81
Total	98.73	97.16	95.92	91.62	98.14	96.45	92.34	91.15
MAORI ETHNIC GROUP								
15-19	88.67	76.68	72.70	58.27	79.49	66.66	68.16	56.18
20-24	94.65	87.18	85.24	68.57	91.53	85.60	77.01	67.45
25-29	96.84	90.72	90.20	74.57	95.55	92.40	80.13	71.42
30-34	97.11	93.41	92.63	79.33	98.51	95.59	83.96	77.17
35-39	97.85	94.23	94.35	82.94	98.69	96.87	88.28	83.35
40-44	97.94	94.68	94.22	85.26	98.98	96.76	90.35	86.86
45-49	97.50	94.90	95.52	85.65	99.22	97.29	91.21	87.76
50-54	97.02	94.07	94.20	85.79	98.80	97.71	91.37	90.11
55-59	97.09	94.12	94.25	86.06	99.35	95.94	92.00	91.45
60-64	99.33	99.00	93.64	92.62	98.46	100.00	92.12	95.98
Total	95.29	89.04	88.00	76.16	91.92	86.44	80.85	75.21

APPENDIX E.6

Percentage of Labour Force Aged 15+ Years in Each Employment Status, by Sex and Ethnic Classification, 1951-1991

	1951	1956	1961	1966	1971	1976	1981	1986	1991	1991/1951
					MALES					
NON-MAORI										
Own Account (No employees)	12.7	11.8	9.5	8.6	8.3	9.3	9.2	12.4	14.1	1.11
Employer	11.6	11.2	9.7	9.3	8.0	8.7	7.8	9.6	9.9	0.86
Wage Earner	74.1	76.1	80.1	81.4	82.7	80.5	79.6	73.0	66.4	0.90
Unemployed	1.3	0.8	0.6	0.6	1.0	1.4	3.2	4.5	8.8	6.60
Relative Assisting Unpaid	0.3	0.2	0.1	0.0	0.0	0.1	0.2	0.5	0.8	2.63
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	1.00
Number	542066	591163	633085	700784	732707	800798	803430	855848	790569	
Not Specified (Excluded)	1009	189	536	1112	2157	2727	3324	3852	7683	
MAORI										
Own Account (No employees)	9.8	7.5	4.9	3.6	3.0	3.3	2.7	4.2	5.9	0.60
Employer	3.0	2.7	2.2	2.6	1.9	2.3	1.8	1.8	2.8	0.94
Wage Earner	83.4	85.6	90.0	92.3	91.5	89.1	82.9	81.0	66.3	0.80
Unemployed	2.5	3.3	2.3	1.5	3.5	5.1	12.4	12.6	24.1	9.71
Relative Assisting Unpaid	1.3	0.9	0.5	0.1	0.1	0.1	0.1	0.4	0.8	0.64
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	1.00
Number	25781	31343	36764	43530	49799	61328	69603	78586	86169	
Not Specified (Excluded)	107	63	121	169	306	245	249	324	1353	
					FEMALES					
NON-MAORI										
Own Account (No employees)	4.5	4.1	2.8	2.9	3.2	3.8	4.0	6.1	6.8	1.51
Employer	3.6	3.2	2.2	2.7	2.6	3.2	3.3	4.0	4.4	1.22
Wage Earner	90.2	91.1	93.6	93.0	92.4	89.7	86.8	79.6	77.4	0.86
Unemployed	1.0	1.1	0.9	1.2	1.8	2.4	4.7	8.2	9.4	9.62
Relative Assisting Unpaid	0.7	0.5	0.5	0.2	0.1	0.8	1.1	2.1	2.1	2.90
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	1.00
Number	164409	185560	213838	265298	312368	378153	420084	614520	606432	
Not Specified (Excluded)	387	95	186	632	705	926	1329	2463	6228	
MAORI										
Own Account (No employees)	3.6	2.5	1.0	0.8	0.7	1.0	0.9	1.5	2.5	0.69
Employer	1.0	1.1	0.6	0.6	0.6	1.0	0.9	1.0	1.6	1.53
Wage Earner	92.4	92.0	95.1	93.7	89.2	87.6	80.4	76.2	69.3	0.75
Unemployed	1.9	3.8	2.9	4.8	9.2	10.0	17.4	20.4	25.1	13.48
Relative Assisting Unpaid	1.0	0.7	0.4	0.2	0.2	0.4	0.4	0.9	1.4	1.33
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	1.00
Number	6701	8416	10910	14363	20664	28101	34209	52806	64638	
Not Specified (Excluded)	36	23	23	151	129	55	117	216	1098	
INDEX OF DISSIMILARITY										
Males	11.4	12.7	12.0	11.8	11.5	12.4	12.6	16.2	15.2	1.34
Females	3.4	3.7	3.4	4.3	7.6	7.5	12.7	12.2	15.8	4.63
All Males/All Females	16.2	15.2	13.7	11.8	10.1	10.4	9.2	11.2	12.0	0.74
All Maori/All Non-Maori	9.3	10.4	9.7	9.6	9.3	10.1	10.4	13.1	15.5	1.66

Notes 1951-1981 = *De Facto* population, 1986-1991 = *De Jure* population.
1951-1981 = Full Time Labour Force, 1986-1991 = Full Time plus Part Time.
1951-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group.
Non-Maori = Total Population minus specified Maori classification.

Source: Compiled from *Census of Population and Dwellings,* various years.

APPENDIX E.7

Component Analysis of Ethnic Differentials in Employment Status for Maori and Non-Maori Labour Forces Aged 15+ Years, by Sex, 1951 and 1976-1991

	MALES					FEMALES				
	1951	1976	1981	1986	1991	1951	1976	1981	1986	1991
OWN ACCOUNT (SELF EMPLOYED, NO EMPLOYEES)										
Non-Maori	12.67	9.33	9.21	12.43	14.06	4.52	3.83	4.04	6.06	6.84
Maori	9.87	3.29	2.70	4.23	5.89	3.65	1.01	0.89	1.46	2.52
Non-Maori (Standardised*)	10.76	8.11	7.77	10.47	11.57	2.95	3.35	3.42	5.16	5.79
Maori (Standardised*)	12.84	4.16	3.47	5.27	7.41	6.11	1.25	1.10	1.72	2.97
Component of observed difference (Non-Maori minus Maori) due to:										
Underlying Differential	0.36	4.99	5.40	6.70	6.17	-1.15	2.46	2.74	4.02	3.57
Age Structure	2.45	1.05	1.10	1.50	2.00	2.02	0.36	0.42	0.58	0.75
Observed Differential	2.81	6.04	6.50	8.20	8.17	0.87	2.82	3.16	4.60	4.32
EMPLOYER										
Non-Maori	11.59	8.69	7.85	9.64	9.91	3.56	3.23	3.28	4.04	4.36
Maori	3.02	2.33	1.82	1.80	2.83	1.05	1.00	0.87	1.05	1.61
Non-Maori (Standardised*)	8.98	7.21	6.34	7.76	7.93	2.04	2.81	2.77	3.40	3.66
Maori (Standardised*)	4.17	2.93	2.28	2.09	3.40	2.28	1.26	1.06	1.18	1.85
Component of observed difference (Non-Maori minus Maori) due to:										
Underlying Differential	6.69	5.32	5.04	6.75	5.81	1.14	1.89	2.06	2.61	2.28
Age Structure	1.88	1.04	0.99	1.09	1.27	1.38	0.35	0.35	0.38	0.47
Observed Differential	8.56	6.35	6.03	7.84	7.09	2.51	2.24	2.41	2.99	2.75
WAGE AND SALARY EARNER					0.15					
Non-Maori	74.10	80.50	79.55	72.95	66.39	90.22	89.71	86.82	79.62	77.36
Maori	83.35	89.13	82.94	80.98	66.33	92.39	87.62	80.44	76.22	69.35
Non-Maori (Standardised*)	78.60	82.86	81.67	75.71	69.24	93.36	90.11	86.88	80.24	77.58
Maori (Standardised*)	79.53	88.64	84.21	81.46	67.13	88.90	89.39	84.14	78.08	71.95
Component of observed difference (Non-Maori minus Maori) due to:										
Underlying Differential	-5.08	-7.20	-2.97	-6.89	1.08	1.15	1.40	4.56	2.78	6.82
Age Structure	-4.16	-1.42	-0.42	-1.14	-1.02	-3.32	0.68	1.82	0.62	1.19
Observed Differential	-9.25	-8.62	-3.39	-8.03	0.05	-2.17	2.09	6.38	3.40	8.01
RELATIVE ASSISTING UNPAID										
Non-Maori	0.30	0.07	0.17	0.50	0.79	0.72	0.82	1.15	2.12	2.08
Maori	1.28	0.15	0.15	0.36	0.82	1.05	0.41	0.36	0.90	1.38
Non-Maori (Standardised*)	0.38	0.08	0.16	0.41	0.62	0.64	0.74	0.99	1.83	1.78
Maori (Standardised*)	1.04	0.13	0.13	0.46	1.06	1.05	0.44	0.39	1.07	1.59
Component of observed difference (Non-Maori minus Maori) due to:										
Underlying Differential	-0.82	-0.06	0.02	0.04	-0.23	-0.37	0.35	0.70	0.99	0.44
Age Structure	-0.16	-0.01	0.00	0.10	0.21	0.04	0.05	0.09	0.23	0.25
Observed Differential	-0.98	-0.08	0.03	0.14	-0.03	-0.33	0.40	0.79	1.22	0.70
UNEMPLOYED										
Non-Maori	1.34	1.41	3.22	4.48	8.84	0.97	2.42	4.71	8.16	9.37
Maori	2.49	5.10	12.39	12.63	24.13	1.87	9.96	17.44	20.37	25.14
Differential	-1.15	-3.69	-9.17	-8.15	-15.29	-0.89	-7.55	-12.73	-12.21	-15.78
Non-Maori (Standardised*)	1.28	1.75	4.07	5.66	10.64	1.01	2.98	5.94	9.37	11.19
Maori (Standardised*)	2.42	4.14	9.91	10.71	21.01	1.67	7.65	13.31	17.95	21.64
Component of observed difference (Non-Maori minus Maori) due to:										
Underlying Differential	-1.15	-3.04	-7.50	-6.60	-12.83	-0.78	-6.11	-10.06	-10.39	-13.11
Age Structure	0.00	-0.65	-1.67	-1.55	-2.46	-0.12	-1.44	-2.68	-1.82	-2.66
Observed Differential	-1.15	-3.69	-9.17	-8.15	-15.29	-0.89	-7.55	-12.73	-12.21	-15.78
INDEX OF DISSIMILARITY (European minus Maori)										
Unstandardised	11.4	12.4	12.6	16.2	15.3	3.4	7.5	12.7	12.2	15.8
Standardised	7.4	10.9	11.3	14.7	13.2	2.6	5.2	8.6	9.8	12.3

Notes: 1951-1981 = *De Facto* population, 1986-1991 = *De Jure* population.
1951-1981 = Full Time Labour Force, 1986-1991 = Full Time plus Part Time Labour Force.
1951-1986 = Sole/Single Origin Maori, 1991 = Maori Ethnic Group; Non-Maori = Total Population minus specified Maori classification.
*Maori standardised to age structure of non-Maori Labour Force, and vice-versa.

Source: Compiled from *Census of Population and Dwellings* (see Appendix E.8).

APPENDIX E.8

E.8.1: Percentage of Age Group in Each Employment Status, Labour Force Aged 15+ Years, by Age and Sex, MAORI, 1951, 1976-1991

	MALES					FEMALES				
	1951	1976	1981	1986	1991	1951	1976	1981	1986	1991
OWN ACCOUNT (NO EMPLOYEES)										
15-19#	2.28	0.42	0.53	0.43	0.61	0.39	0.11	0.07	0.20	0.19
20-24	3.26	1.41	0.99	1.71	1.74	0.82	0.51	0.37	0.70	0.86
25-29	6.61	2.71	2.24	3.82	4.08	2.49	1.10	1.37	1.53	2.28
30-34	10.31	3.90	3.42	5.59	6.54	5.12	1.61	1.27	2.22	3.12
35-39	11.82	4.82	4.01	6.82	8.93	8.52	1.58	1.48	2.07	3.67
40-44	15.56	5.40	4.36	6.87	9.41	11.60	1.65	1.34	2.25	3.95
45-49	17.44	5.39	4.65	7.02	9.81	12.40	1.76	1.36	2.18	4.08
50-54	20.17	5.81	4.80	6.68	10.22	15.61	1.65	2.32	2.25	4.35
55-59	24.38	6.04	4.66	5.99	11.39	17.39	2.93	1.06	2.10	4.78
60-64^	26.65	7.42	7.24	8.25	18.71	34.04	4.07	1.33	4.62	5.41
65+	25.63	14.46	15.04	25.00	...	20.00	3.41	9.09	9.09	...
TOTAL	9.87	3.29	2.70	4.23	5.89	3.65	1.01	0.89	1.46	2.52
Standardised*	12.84	4.16	3.47	5.27	7.41	6.11	1.25	1.10	1.72	2.97
EMPLOYER OF OTHERS										
15-19#	0.42	0.24	0.24	0.41	0.58	0.13	0.05	0.10	0.23	0.49
20-24	0.91	0.70	0.59	0.75	0.68	0.24	0.35	0.33	0.61	0.56
25-29	2.01	1.57	1.51	1.51	1.79	0.25	0.91	0.80	1.03	1.26
30-34	3.69	3.14	2.02	2.59	3.15	1.43	1.27	1.19	1.52	1.93
35-39	3.17	3.94	2.78	3.26	4.87	0.87	1.72	1.66	1.70	2.51
40-44	4.94	3.97	3.73	3.11	5.44	2.82	2.26	1.72	1.57	2.70
45-49	5.11	4.39	3.38	2.92	4.93	1.55	1.98	1.85	1.71	2.59
50-54	5.50	3.82	3.54	2.18	4.36	4.62	2.31	1.35	1.54	2.26
55-59	6.69	4.50	2.82	2.13	3.83	9.57	1.95	1.41	0.84	2.23
60-64^	10.79	4.24	3.45	2.97	4.85	23.40	1.48	2.67	1.54	2.70
65+	14.08	8.82	7.08	2.59	...	28.00	10.23	4.55	2.27	...
TOTAL	3.02	2.33	1.82	1.80	2.83	1.05	1.00	0.87	1.05	1.61
Standardised*	4.17	2.93	2.28	2.09	3.40	2.28	1.26	1.06	1.18	1.85
WAGE AND SALARY EARNERS										
15-19#	90.36	86.32	71.48	70.10	55.26	96.61	75.28	58.12	65.27	53.82
20-24	91.61	92.14	83.80	81.58	65.12	95.30	88.34	80.61	72.90	64.87
25-29	88.20	91.98	85.44	83.68	67.85	94.77	91.81	86.89	74.78	66.37
30-34	83.72	89.72	86.50	83.40	68.77	90.78	94.70	91.11	77.93	70.06
35-39	82.19	88.99	86.90	83.40	68.16	86.90	94.78	91.69	82.18	75.40
40-44	76.89	88.32	85.76	83.20	69.38	84.33	94.16	92.45	84.16	78.44
45-49	74.27	87.18	86.16	84.93	69.97	83.33	94.39	93.09	85.53	78.85
50-54	70.44	86.73	85.20	84.19	69.81	78.03	94.07	92.84	85.88	81.20
55-59	66.24	86.13	85.89	85.08	69.09	70.43	93.17	92.58	86.55	82.32
60-64^	59.25	87.28	87.24	79.21	63.05	42.55	92.96	93.33	83.08	80.31
65+	56.32	75.74	76.99	53.45	...	52.00	84.09	81.82	70.45	...
TOTAL	83.35	89.13	82.94	80.98	66.33	92.39	87.62	80.44	76.22	69.35
Standardised*	79.53	88.64	84.21	81.46	67.13	88.90	89.39	84.14	78.08	71.95
RELATIVE ASSISTING UNPAID										
15-19#	4.23	0.41	0.31	0.46	1.02	1.00	0.34	0.13	0.26	0.80
20-24	1.46	0.14	0.15	0.29	0.56	0.94	0.33	0.28	0.40	0.70
25-29	0.73	0.11	0.06	0.21	0.48	1.12	0.42	0.56	1.03	1.14
30-34	0.45	0.04	0.07	0.28	0.57	1.02	0.41	0.51	1.15	1.63
35-39	0.55	0.01	0.14	0.19	0.70	1.53	0.44	0.55	1.17	1.54
40-44	0.29	0.07	0.05	0.35	0.85	1.25	0.40	0.48	1.43	1.58
45-49	0.32	0.07	0.12	0.32	0.71	0.78	0.59	0.49	0.93	2.07
50-54	0.38	0.13	0.16	0.56	1.14	1.73	0.74	0.39	1.54	2.09
55-59	0.76	0.19	0.12	0.41	1.53	0.87	0.49	0.00	2.10	2.07
60-64^	1.54	0.10	0.34	1.98	6.47	0.00	1.11	1.33	2.31	6.56
65+	2.53	0.25	0.00	5.17	...	0.00	0.00	0.00	6.82	...
TOTAL	1.28	0.15	0.15	0.36	0.82	1.05	0.41	0.36	0.90	1.38
Standardised*	1.04	0.13	0.13	0.46	1.06	1.05	0.44	0.39	1.07	1.59
UNEMPLOYED										
15-19#	2.70	12.61	27.43	28.61	42.53	1.87	24.22	41.58	34.03	44.70
20-24	2.76	5.62	14.47	15.67	31.91	2.70	10.47	18.41	25.40	33.01
25-29	2.44	3.63	10.75	10.78	25.80	1.37	5.76	10.38	21.62	28.95
30-34	1.83	3.21	7.99	8.15	20.96	1.64	2.02	5.93	17.17	23.26
35-39	2.27	2.24	6.17	6.33	17.34	2.18	1.48	4.62	12.87	16.88
40-44	2.33	2.23	6.10	6.47	14.93	0.00	1.53	4.01	10.58	13.34
45-49	2.85	2.97	5.68	4.81	14.58	1.94	1.28	3.21	9.65	12.42
50-54	3.51	3.52	6.30	6.39	14.47	0.00	1.24	3.09	8.78	10.10
55-59	1.94	3.14	6.50	6.40	14.16	1.74	1.46	4.95	8.40	8.60
60-64^	1.76	0.96	1.72	7.59	6.93	0.00	0.37	1.33	8.46	5.02
65+	1.44	0.74	0.88	13.79	...	0.00	2.27	4.55	11.36	...
TOTAL	2.49	5.10	12.39	12.63	24.13	1.87	9.96	17.44	20.37	25.14
Standardised*	2.42	4.14	9.91	10.71	21.01	1.67	7.65	13.31	17.95	21.64

(continued over)

E.8.1 (Continued): Percentage of Age Group in Each Employment Status, Labour Force Aged 15+ Years, by Age and Sex, MAORI, 1951, 1976-1991

	MALES					FEMALES				
	1951	1976	1981	1986	1991	1951	1976	1981	1986	1991
EMPLOYMENT AS PERCENTAGE OF LABOUR FORCE										
15-19#	97.30	87.39	72.57	71.39	57.47	98.13	75.78	58.42	65.97	55.30
20-24	97.24	94.38	85.53	84.33	68.09	97.30	89.53	81.59	74.60	66.99
25-29	97.56	96.37	89.25	89.22	74.20	98.63	94.24	89.62	78.38	71.05
30-34	98.17	96.79	92.01	91.85	79.04	98.36	97.98	94.07	82.83	76.74
35-39	97.73	97.76	93.83	93.67	82.66	97.82	98.52	95.38	87.13	83.12
40-44	97.67	97.77	93.90	93.53	85.07	100.00	98.47	95.99	89.42	86.66
45-49	97.15	97.03	94.32	95.19	85.42	98.06	98.72	96.79	90.35	87.58
50-54	96.49	96.48	93.70	93.61	85.53	100.00	98.76	96.91	91.22	89.90
55-59	98.06	96.86	93.50	93.60	85.84	98.26	98.54	95.05	91.60	91.40
60-64^	98.24	99.04	98.28	92.41	93.07	100.00	99.63	98.67	91.54	94.98
65+	98.56	99.26	99.12	86.21	...	100.00	97.73	95.45	88.64	...
TOTAL	97.51	94.90	87.61	87.37	75.87	98.13	90.04	82.56	79.63	74.86

E.8.2: Age Structure of the Maori Labour Force, Numbers and Percentages at Each Age, by Sex, 1951, 1976-1991

	MALES					FEMALES				
	1951	1976	1981	1986	1991	1951	1976	1981	1986	1991
	NUMBER									
15-19#	3808	10633	12456	12510	10863	2302	7945	8976	10296	9711
20-24	4851	11451	13665	15600	15033	1702	4881	6435	9840	11196
25-29	3976	9136	10158	12717	14277	803	3089	3729	7827	9741
30-34	2899	6982	8334	9720	12564	488	2677	3543	6498	9027
35-39	2903	6782	6366	7917	9912	458	2971	3249	5640	7767
40-44	2449	5334	6192	6072	8160	319	2481	3141	4395	6456
45-49	1858	4416	4965	5553	5904	258	1870	2430	3855	4638
50-54	1309	3014	3810	4269	5019	173	1214	1551	2529	3447
55-59	927	2134	2445	2955	3135	115	615	849	1428	1884
60-64^	454	1038	870	909	1299	47	270	225	390	777
65+	277	408	339	348	...	25	88	66	132	...
TOTAL	25711	61328	69600	78570	86166	6690	28101	34194	52830	64644
Not Specified	107	245	249	324	1353	36	55	117	216	1098
	PERCENTAGE AT EACH AGE									
15-19#	0.15	0.17	0.18	0.16	0.13	0.34	0.28	0.26	0.19	0.15
20-24	0.19	0.19	0.20	0.20	0.17	0.25	0.17	0.19	0.19	0.17
25-29	0.15	0.15	0.15	0.16	0.17	0.12	0.11	0.11	0.15	0.15
30-34	0.11	0.11	0.12	0.12	0.15	0.07	0.10	0.10	0.12	0.14
35-39	0.11	0.11	0.09	0.10	0.12	0.07	0.11	0.10	0.11	0.12
40-44	0.10	0.09	0.09	0.08	0.09	0.05	0.09	0.09	0.08	0.10
45-49	0.07	0.07	0.07	0.07	0.07	0.04	0.07	0.07	0.07	0.07
50-54	0.05	0.05	0.05	0.05	0.06	0.03	0.04	0.05	0.05	0.05
55-59	0.04	0.03	0.04	0.04	0.04	0.02	0.02	0.02	0.03	0.03
60-64^	0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01
65+	0.01	0.01	0.00	0.00	...	0.00	0.00	0.00	0.00	...
TOTAL	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Notes: 1951-1981 = *De Facto* population, 1986-1991 = *De Jure* population.

1951-1981 = Full Time Labour Force, 1986-1991 = Full Time plus Part Time Labour Force (excludes labour force status not specified).

1951-1986 = Sole/Single Origin Maori, 1991 = Maori Ethnic Group; Non-Maori = Total Population minus specified Maori classification.

#Data for 1951 refer to population aged less than 20 years.

^Data for 1991 refer to population aged 60+ years.

*Maori standardised to age structure of non-Maori Labour Force, and vice-versa.

Source: Compiled from *Census of Population and Dwellings*, various years.

APPENDIX E.8 (Continued)

E.8.3: Percentage of Age Group in Each Employment Status, Labour Force Aged 15+ Years, by Age and Sex, NON-MAORI, 1951, 1976-1991

	MALES					FEMALES				
	1951	1976	1981	1986	1991	1951	1976	1981	1986	1991
OWN ACCOUNT (NO EMPLOYEES)										
15-19#	1.13	0.91	0.92	0.85	0.97	0.39	0.25	0.19	0.31	0.41
20-24	5.33	4.52	4.39	5.13	4.30	1.34	1.29	1.28	1.96	1.75
25-29	10.93	9.03	8.76	11.36	9.97	2.84	4.30	4.22	5.43	5.01
30-34	15.28	11.47	10.83	14.53	13.99	4.77	6.98	7.00	8.18	8.35
35-39	16.52	12.40	11.83	15.51	16.07	6.68	6.54	6.46	8.48	8.53
40-44	15.83	12.26	11.89	15.88	17.38	7.20	5.56	5.78	8.22	8.24
45-49	14.92	11.49	11.25	15.86	18.03	8.70	5.09	5.22	7.99	8.60
50-54	13.59	10.60	10.86	15.25	18.65	10.23	4.65	5.16	8.22	9.38
55-59	14.15	10.46	10.22	15.07	19.49	12.21	4.90	4.73	8.55	10.83
60-64^	16.06	11.30	12.94	19.80	32.17	15.58	6.33	6.58	10.81	18.60
65+	21.71	17.15	22.10	31.67	...	18.18	10.86	14.30	17.77	...
TOTAL	12.67	9.33	9.21	12.43	14.06	4.52	3.83	4.04	6.06	6.84
Standardised*	10.76	8.11	7.77	10.47	11.57	2.95	3.35	3.42	5.16	5.79
EMPLOYER OF OTHERS										
15-19#	0.31	0.24	0.29	0.21	0.27	0.12	0.11	0.12	0.17	0.28
20-24	2.23	1.93	1.67	1.52	1.05	0.44	0.75	0.70	0.79	0.72
25-29	6.64	6.38	5.45	5.75	4.43	1.36	3.15	2.85	3.02	2.55
30-34	11.64	10.45	9.16	10.96	9.72	3.24	5.41	5.32	5.41	5.23
35-39	14.06	12.46	11.18	14.14	13.29	4.92	5.77	5.86	6.16	5.92
40-44	15.06	12.89	12.09	15.79	14.85	6.08	5.45	5.42	6.46	6.20
45-49	15.69	13.09	11.74	15.37	15.43	6.79	5.18	4.94	6.15	6.19
50-54	15.94	11.79	10.91	13.48	14.59	8.46	4.41	4.43	5.56	6.30
55-59	16.54	10.25	9.15	11.60	12.82	10.46	4.09	3.69	4.97	5.97
60-64^	18.87	11.01	10.61	14.11	16.93	14.62	4.80	4.58	6.11	7.69
65+	25.46	15.40	16.03	17.13	...	25.33	7.24	7.69	8.04	...
TOTAL	11.59	8.69	7.85	9.64	9.91	3.56	3.23	3.28	4.04	4.36
Standardised*	8.98	7.21	6.34	7.76	7.93	2.04	2.81	2.77	3.40	3.66
WAGE AND SALARY EARNERS										
15-19#	95.98	94.83	89.49	81.49	74.19	98.17	93.24	86.36	79.59	73.04
20-24	90.85	90.94	88.40	86.19	78.43	96.54	94.37	91.71	87.86	82.52
25-29	81.20	83.14	82.18	78.95	75.08	93.81	89.17	87.49	81.34	80.86
30-34	71.84	77.11	77.73	71.73	68.59	89.90	84.77	83.08	75.39	75.20
35-39	68.07	74.40	75.20	68.13	63.98	86.52	85.54	84.04	76.40	76.40
40-44	67.58	74.04	74.33	66.28	61.89	84.97	87.06	85.47	77.92	78.06
45-49	67.72	74.57	75.22	66.68	60.77	82.59	87.97	86.27	78.93	77.96
50-54	68.46	76.64	76.16	68.84	60.34	79.36	89.19	86.84	79.30	76.84
55-59	67.23	78.27	78.02	70.03	60.39	75.78	89.25	88.24	79.45	75.52
60-64^	63.14	77.10	75.19	60.95	43.85	68.24	87.56	85.96	73.93	63.57
65+	51.06	66.74	59.40	42.99	...	55.50	80.18	74.08	60.91	...
TOTAL	74.10	80.50	79.55	72.95	66.39	90.22	89.71	86.82	79.62	77.36
Standardised*	78.60	82.86	81.67	75.71	69.24	93.36	90.11	86.88	80.24	77.58
RELATIVE ASSISTING UNPAID										
15-19#	1.44	0.23	0.31	0.56	0.88	0.43	0.18	0.24	0.34	0.54
20-24	0.35	0.06	0.16	0.27	0.39	0.40	0.34	0.42	0.61	0.50
25-29	0.17	0.04	0.11	0.25	0.37	0.77	1.10	1.24	2.04	1.56
30-34	0.12	0.02	0.06	0.30	0.41	1.09	1.51	1.99	3.13	2.71
35-39	0.08	0.01	0.07	0.35	0.55	1.15	1.23	1.72	2.94	2.42
40-44	0.11	0.03	0.05	0.39	0.62	1.06	1.08	1.42	2.63	2.18
45-49	0.10	0.02	0.04	0.42	0.71	1.02	0.97	1.34	2.53	2.32
50-54	0.27	0.03	0.08	0.51	0.80	0.98	0.94	1.46	2.44	2.64
55-59	0.31	0.06	0.17	0.55	0.96	0.70	1.07	1.42	2.66	3.12
60-64^	0.35	0.18	0.70	1.96	4.69	0.85	1.01	2.19	4.87	8.03
65+	0.51	0.56	2.18	4.25	...	0.46	1.53	3.31	7.71	...
TOTAL	0.30	0.07	0.17	0.50	0.79	0.72	0.82	1.15	2.12	2.08
Standardised*	0.38	0.08	0.16	0.41	0.62	0.64	0.74	0.99	1.83	1.78
UNEMPLOYED										
15-19#	1.15	3.79	8.99	16.89	23.70	0.88	6.23	13.08	19.58	25.73
20-24	1.24	2.54	5.38	6.89	15.83	1.27	3.25	5.88	8.78	14.52
25-29	1.06	1.41	3.51	3.69	10.16	1.21	2.28	4.19	8.17	10.02
30-34	1.11	0.95	2.22	2.47	7.29	1.00	1.33	2.61	7.90	8.52
35-39	1.27	0.73	1.71	1.87	6.10	0.72	0.92	1.92	6.03	6.74
40-44	1.42	0.78	1.64	1.66	5.27	0.69	0.85	1.92	4.78	5.32
45-49	1.57	0.84	1.75	1.66	5.06	0.90	0.79	2.23	4.39	4.92
50-54	1.73	0.93	1.98	1.92	5.63	0.97	0.81	2.10	4.48	4.84
55-59	1.77	0.96	2.45	2.75	6.34	0.84	0.68	1.93	4.37	4.57
60-64^	1.58	0.42	0.56	3.18	2.35	0.71	0.30	0.69	4.29	2.12
65+	1.26	0.14	0.30	3.96	...	0.53	0.19	0.63	5.58	...
TOTAL	1.34	1.41	3.22	4.48	8.84	0.97	2.42	4.71	8.16	9.37
Standardised*	1.28	1.75	4.07	5.66	10.64	1.01	2.98	5.94	9.37	11.19

(continued over)

E.8.3 (Continued): Percentage of Age Group in Each Employment Status, Labour Force Aged 15+ Years, by Age and Sex, NON-MAORI, 1951, 1976-1991

	MALES					FEMALES				
	1951	1976	1981	1986	1991	1951	1976	1981	1986	1991
EMPLOYMENT AS PERCENTAGE OF LABOUR FORCE										
15-19*	98.85	96.21	91.01	83.11	76.30	99.12	93.77	86.92	80.42	74.27
20-24	98.76	97.46	94.62	93.11	84.17	98.73	96.75	94.12	91.22	85.48
25-29	98.94	98.59	96.49	96.31	89.84	98.79	97.72	95.81	91.83	89.98
30-34	98.89	99.05	97.78	97.53	92.71	99.00	98.67	97.39	92.10	91.48
35-39	98.73	99.27	98.29	98.13	93.90	99.28	99.08	98.08	93.97	93.26
40-44	98.58	99.22	98.36	98.34	94.73	99.31	99.15	98.08	95.22	94.68
45-49	98.43	99.16	98.25	98.34	94.94	99.10	99.21	97.77	95.61	95.08
50-54	98.27	99.07	98.02	98.08	94.37	99.03	99.19	97.90	95.52	95.16
55-59	98.23	99.04	97.55	97.25	93.66	99.16	99.32	98.07	95.63	95.43
60-64**	98.42	99.58	99.44	96.82	97.65	99.29	99.70	99.31	95.71	97.88
65+	98.74	99.86	99.70	96.04	...	99.47	99.81	99.37	94.42	...
TOTAL	98.66	98.59	96.78	95.52	91.16	99.03	97.58	95.29	91.84	90.63

E.8.4: Age Structure of the Non-Maori Labour Force, Numbers and Percentages at Each Age, by Sex, 1951, 1976-1991

	MALES					FEMALES				
	1951	1976	1981	1986	1991	1951	1976	1981	1986	1991
	NUMBER									
15-19#	44001	75473	75945	86580	59913	38697	67211	64914	78798	55377
20-24	63857	108192	110796	113778	93483	34615	70104	77577	93882	80349
25-29	68499	113005	103878	112773	100974	17471	41301	46797	76218	76263
30-34	62759	91947	107097	106116	105843	13032	32240	43647	71688	74370
35-39	64762	81313	86850	106923	99249	13306	35735	43563	81342	78420
40-44	61088	70955	76425	85794	99054	13092	33678	42789	67974	83673
45-49	53821	77476	67569	73863	78561	11822	34706	35802	56529	64659
50-54	43980	71670	71352	63933	64341	9302	30190	31602	41661	48156
55-59	33102	57831	62403	62928	49467	6395	19766	22215	30000	28599
60-64^	23826	34137	26943	27654	39684	3542	8914	7797	10908	16551
65+	22082	18799	14187	15534	...	3036	4308	3357	5487	...
TOTAL	541777	800798	803445	855876	790569	164310	378153	420060	614487	606417
Not Specified	1009	2727	3324	3852	7683	387	926	1329	2463	6228
	PERCENTAGE AT EACH AGE									
15-19*	0.08	0.09	0.09	0.10	0.08	0.24	0.18	0.15	0.13	0.09
20-24	0.12	0.14	0.14	0.13	0.12	0.21	0.19	0.18	0.15	0.13
25-29	0.13	0.14	0.13	0.13	0.13	0.11	0.11	0.11	0.12	0.13
30-34	0.12	0.11	0.13	0.12	0.13	0.08	0.09	0.10	0.12	0.12
35-39	0.12	0.10	0.11	0.12	0.13	0.08	0.09	0.10	0.13	0.13
40-44	0.11	0.09	0.10	0.10	0.13	0.08	0.09	0.10	0.11	0.14
45-49	0.10	0.10	0.08	0.09	0.10	0.07	0.09	0.09	0.09	0.11
50-54	0.08	0.09	0.09	0.07	0.08	0.06	0.08	0.08	0.07	0.08
55-59	0.06	0.07	0.08	0.07	0.06	0.04	0.05	0.05	0.05	0.05
60-64**	0.04	0.04	0.03	0.03	0.05	0.02	0.02	0.02	0.02	0.03
65+	0.04	0.02	0.02	0.02	...	0.02	0.01	0.01	0.01	...
TOTAL	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Notes: 1951-1981 = *De Facto* population, 1986-1991 = *De Jure* population.

1951-1981 = Full Time Labour Force, 1986-1991 = Full Time plus Part Time Labour Force (excludes labour force status not specified).

1951-1986 = Sole/Single Origin Maori, 1991 = Maori Ethnic Group; Non-Maori = Total Population minus specified Maori classification.

#Data for 1951 refer to population aged less than 20 years.

^Data for 1991 refer to population aged 60+ years.

*Maori standardised to age structure of non-Maori Labour Force, and vice-versa.

Source: Compiled from *Census of Population and Dwellings*, various years.

APPENDIX F

APPENDIX F.1

Industrial Sector (Full-time plus Part-time, Employed Only) and Index of Ethnic Dissimilarity for Maori Ethnic Group and European Workforces Aged 15-64 Years, by Sex, 1976-1991

Industrial Sector	MALES					FEMALES				
	Number		Percentage			Number		Percentage		
	European	Maori	European	Maori	ID	European	Maori	European	Maori	ID
1976										
Primary Sector	92958	9888	13.23	13.85	-0.63	24090	2196	6.19	6.02	0.18
Secondary Sector	337485	46863	48.02	65.66	-17.63	93921	15015	24.15	41.15	-17.00
Tertiary Sector	272298	14625	38.75	20.49	18.26	270882	19278	69.65	52.83	16.82
Total	702741	71376	100.00	100.00	18.26	388893	36489	100	100	17.00
Not Specified/Not Applicable (Excluded)	7617	2028	1.07	2.76		5130	1002	1.30	2.67	
1981										
Primary Sector	96939	12213	13.64	15.04	-1.39	32970	3546	7.46	7.84	-0.38
Secondary Sector	308826	46521	43.47	57.27	-13.81	96639	16767	21.87	37.08	-15.21
Tertiary Sector	304728	22494	42.89	27.69	15.20	312222	24906	70.67	55.08	15.59
Total	710493	81228	100.00	100.00	15.20	441831	45219	100.00	100.00	15.59
Not Specified/Not Applicable (Excluded)	9111	1506	1.28	1.85		5160	837	1.17	1.85	
1986										
Primary Sector	99459	12234	13.53	14.20	-0.67	42546	4413	8.31	7.94	0.38
Secondary Sector	312336	48708	42.48	56.53	-14.05	105432	19368	20.61	34.83	-14.22
Tertiary Sector	323526	25227	44.00	29.28	14.72	363702	31827	71.08	57.23	13.85
Total	735321	86169	100.00	100.00	14.72	511680	55608	100.00	100.00	14.22
Not Specified/Not Applicable (Excluded)	6153	1497	0.83	1.71		3435	804	0.67	1.43	
1991										
Primary Sector	85998	7986	13.17	12.51	0.66	39282	2874	7.78	6.05	1.73
Secondary Sector	242277	30810	37.09	48.25	-11.16	81402	11811	16.12	24.85	-8.73
Tertiary Sector	324930	25062	49.74	39.25	10.50	384174	32841	76.10	69.10	6.99
Total	653205	63858	100.00	100.00	11.16	504858	47526	100.00	100.00	8.73
Not Specified/Not Applicable (Excluded)	11082	2538	1.67	3.82		8238	1746	1.61	3.54	

Notes: (a) ID = Index of dissimilarity

Source: Database A

APPENDIX F.2

F.2.1: Industrial Category (Full-time plus Part-time, Employed Only), Workforce Aged 15-64 Years, by Age, Sex, and Percentage of Category Aged Less Than 30 Years, 1976

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	< 30 years
ALL MALES												
Agriculture Hunting Forestry Fishing	10911	12315	13800	12087	11052	9432	10080	8796	7218	5070	100761	36.75
Building and Construction	12342	16335	15738	12447	11286	9489	9771	8175	6018	3048	104649	42.44
Community Social Personal	9633	16725	18375	14394	11955	10584	11568	11391	9120	5946	119691	37.37
Electricity Gas and Water	1128	1824	1725	1404	1338	1257	1524	1452	1167	696	13515	34.61
Finance Insurance Property	2973	5739	7242	6066	4968	3885	3786	3459	2553	1977	42648	37.41
Manufacturing	25896	32754	30939	24288	21792	19026	20235	18435	15303	8994	217662	41.16
Mining and Quarrying	288	543	618	543	450	447	519	459	414	222	4503	32.18
Transport Storage Communications	5781	10683	11853	10164	9459	8409	9183	8592	6801	3339	84264	33.61
Wholesale Retail and Restaurant	14778	15183	15828	13416	12285	10830	12225	11346	9549	6153	121593	37.66
Total	85428	113910	117762	96027	85785	74391	80043	73110	59037	35964	821457	38.60
Not Specified/Not Applicable (Excluded)	1698	1809	1644	1218	1200	1032	1152	1005	894	519	12171	42.32
ALL FEMALES												
Agriculture Hunting Forestry Fishing	2094	2448	3576	4101	4161	3429	2823	2181	1353	681	26847	30.24
Building and Construction	696	831	1056	1137	936	759	618	399	258	111	6801	37.98
Community Social Personal	23352	29571	19119	14901	15864	14208	13860	11814	7998	3999	154686	46.57
Electricity Gas and Water	372	351	183	84	114	117	135	132	96	30	1614	56.13
Finance Insurance Property	9876	9060	4296	2727	2706	2238	2217	1920	1263	675	36978	62.83
Manufacturing	13305	12849	9282	8727	9462	8724	8730	7545	4896	2148	85668	41.36
Mining and Quarrying	48	36	42	15	24	21	21	15	6	12	240	52.50
Transport Storage Communications	4380	5319	3474	2457	2496	1998	1818	1617	954	414	24927	52.85
Wholesale Retail and Restaurant	18147	13998	10677	10254	11838	11310	12153	10278	6936	3354	108945	39.31
Total	73809	75450	52437	45135	48303	43455	43083	36504	24189	11652	454017	44.42
Not Specified/Not Applicable (Excluded)	1539	987	732	732	702	651	708	603	429	228	7311	44.56

(continued over)

APPENDIX F.2 (Continued)

F.2.2: Industrial Category (Full-time plus Part-time, Employed Only), Workforce Aged 15-64 Years, by Age, Sex, and Percentage of Category Aged Less Than 30 Years, 1991

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	< 30 years
ALL MALES												
Agriculture Hunting Forestry Fishing	7155	9072	11178	12165	11730	11490	9324	8160	6696	5373	92343	29.68
Building and Construction	4569	9324	9936	11610	10122	9729	7530	6243	4728	1746	75537	31.55
Community Social Personal	6501	14097	17079	20133	20319	20208	15864	12849	10284	4851	142185	26.50
Electricity Gas and Water	189	900	1230	1392	1359	1254	1032	972	825	237	9390	24.70
Finance Insurance Property	2706	8652	10338	11328	10896	11532	8526	6579	4479	2679	77715	27.92
Manufacturing	10218	20814	23547	23283	20811	20133	15885	12843	9606	3474	160614	33.98
Mining and Quarrying	111	402	552	651	621	540	432	357	228	108	4002	26.61
Transport Storage Communications	1395	5370	7779	8589	8415	8490	7113	5676	3636	1440	57903	25.12
Wholesale Retail and Restaurant	18726	19518	18804	18042	16269	16503	13146	10695	7980	3909	143592	39.73
Total	52848	89937	102450	109245	102447	101748	80352	65661	49569	24540	778797	31.49
Not Specified/Not Applicable (Excluded)	1278	1788	2007	2052	1905	1869	1500	1287	1107	723	15516	32.70
ALL FEMALES												
Agriculture Hunting Forestry Fishing	1956	2829	4440	6195	6264	6453	5262	4536	3036	1767	42738	21.59
Building and Construction	339	717	1038	1476	1443	1326	948	714	402	144	8547	24.50
Community Social Personal	9834	23247	26460	29424	32976	35001	27144	20463	12390	4590	221529	26.88
Electricity Gas and Water	111	273	255	195	219	231	168	150	75	27	1704	37.50
Finance Insurance Property	6216	15762	13413	10083	9786	10296	7242	4740	2565	882	80985	43.70
Manufacturing	4821	9813	9396	8427	8889	9756	7584	5643	3126	1026	68481	35.09
Mining and Quarrying	27	84	84	63	51	75	42	27	9	3	465	41.94
Transport Storage Communications	1533	4560	4617	3585	3249	3390	2529	1716	849	288	26316	40.70
Wholesale Retail and Restaurant	21396	18534	15372	14928	16011	17772	14154	10614	6315	2319	137415	40.24
Total	47277	77139	76440	75873	80463	85782	66180	49500	29382	11403	599439	33.51
Not Specified/Not Applicable (Excluded)	1044	1320	1365	1497	1575	1482	1107	897	615	357	11259	33.12

Source: Database A

APPENDIX F.3

F.3.1: Industrial Category (Full-time plus Part-time, Employed Only), Percentage at Each Age, by Ethnicity, Males, 1976

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Agriculture Hunting Forestry Fishing	13.10	11.31	12.37	13.20	13.48	13.11	12.79	12.21	12.37	14.40	12.70	12.63
Building and Construction	14.99	14.49	13.54	13.03	13.26	12.81	12.19	10.98	9.97	8.24	12.75	13.36
Community Social Personal	11.92	16.19	16.92	16.08	14.83	15.01	15.15	16.23	16.14	17.14	15.55	15.28
Electricity Gas and Water	1.35	1.57	1.41	1.40	1.50	1.70	1.92	2.03	2.02	1.96	1.64	1.56
Finance Insurance Property	4.01	5.69	6.87	7.07	6.52	5.82	5.14	5.11	4.65	5.85	5.77	5.75
Manufacturing	28.24	26.35	24.06	23.53	24.02	24.66	24.86	24.90	25.77	24.81	25.08	25.35
Mining and Quarrying	0.32	0.45	0.50	0.53	0.48	0.56	0.63	0.60	0.69	0.58	0.52	0.49
Transport Storage Communications	7.11	9.53	9.88	10.24	10.60	10.95	11.26	11.68	11.57	9.24	10.19	9.81
Wholesale Retail and Restaurant	18.96	14.42	14.45	14.92	15.33	15.38	16.06	16.25	16.83	17.76	15.79	15.77
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	68634	92388	98832	81918	72840	64269	71049	66231	53715	32865	702741	
Not Specified/Not Applicable (Excluded)	1044	993	936	720	705	618	765	759	669	408	7617	
Age Structure	0.10	0.13	0.14	0.12	0.10	0.09	0.10	0.09	0.08	0.05	1.00	
MAORI ETHNIC GROUP												
Agriculture Hunting Forestry Fishing	14.04	11.37	11.43	12.16	12.84	13.02	14.63	14.61	16.17	15.79	12.86	13.24
Building and Construction	14.09	17.22	16.94	16.35	15.90	16.26	16.69	18.17	19.14	17.39	16.41	16.74
Community Social Personal	9.57	8.30	8.85	8.25	9.23	9.72	8.81	9.46	9.27	12.13	9.02	9.14
Electricity Gas and Water	1.47	2.29	2.37	2.53	2.61	2.11	2.47	2.24	1.90	1.83	2.20	2.23
Finance Insurance Property	1.22	1.72	1.94	1.70	1.76	1.47	1.35	1.16	0.95	1.60	1.57	1.53
Manufacturing	42.85	40.11	36.63	34.80	32.57	32.12	31.26	31.70	31.27	30.21	36.34	34.93
Mining and Quarrying	0.51	0.77	1.00	1.19	1.15	1.18	1.23	1.41	1.43	1.60	0.99	1.10
Transport Storage Communications	5.97	10.22	13.53	15.70	16.90	17.34	16.63	15.52	13.56	12.81	12.90	13.78
Wholesale Retail and Restaurant	10.28	8.00	7.32	7.31	7.05	6.78	6.93	5.73	6.30	6.64	7.70	7.32
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	11817	13620	11154	8292	7830	6108	5106	3615	2523	1311	71376	
Not Specified/Not Applicable (Excluded)	465	390	249	183	207	171	156	99	78	30	2028	
Age Structure	0.17	0.19	0.16	0.12	0.11	0.09	0.07	0.05	0.04	0.02	1.00	

(continued over)

APPENDIX F.3 (continued)

F.3.2: Industrial Category (Full-time plus Part-time, Employed Only), Percentage at Each Age, by Ethnicity, Females, 1976

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Agriculture Hunting Forestry Fishing	2.53	3.17	7.18	9.81	9.25	8.30	6.85	6.13	5.67	5.89	6.14	5.90
Building and Construction	0.99	1.20	2.20	2.81	2.13	1.91	1.56	1.19	1.07	1.01	1.63	1.64
Community Social Personal	33.74	41.49	38.47	34.06	33.73	33.29	32.83	33.01	34.07	35.37	35.44	35.63
Electricity Gas and Water	0.57	0.49	0.37	0.20	0.23	0.28	0.32	0.38	0.43	0.29	0.38	0.39
Finance Insurance Property	14.85	13.05	8.92	6.77	6.24	5.70	5.61	5.67	5.54	6.15	8.86	9.68
Manufacturing	15.48	14.55	15.35	17.57	17.99	19.01	19.29	20.17	19.77	18.13	17.21	16.76
Mining and Quarrying	0.07	0.05	0.07	0.03	0.06	0.06	0.05	0.05	0.03	0.11	0.06	0.06
Transport Storage Communications	5.95	7.02	6.30	5.05	4.74	4.42	4.16	4.45	3.96	3.39	5.32	5.53
Wholesale Retail and Restaurant	25.81	18.97	21.15	23.71	25.62	27.05	29.34	28.96	29.46	29.66	24.97	24.41
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	60969	63783	44007	38154	41055	37629	38190	32862	21804	10440	388893	
Not Specified/Not Applicable (Excluded)	1032	543	474	495	537	474	540	486	357	192	5130	
Age Structure	0.16	0.16	0.11	0.10	0.11	0.10	0.10	0.08	0.06	0.03	1.00	
MAORI ETHNIC GROUP												
Agriculture Hunting Forestry Fishing	5.71	5.63	6.73	6.68	5.81	5.81	5.12	6.04	6.69	7.87	5.97	6.01
Building and Construction	0.86	0.51	1.12	1.01	0.92	0.79	0.47	0.18	1.00	0.00	0.78	0.73
Community Social Personal	23.36	29.41	28.18	31.16	32.81	35.04	34.81	35.70	32.44	38.58	29.81	30.88
Electricity Gas and Water	0.29	0.37	0.26	0.16	0.35	0.26	0.12	0.18	0.00	0.00	0.26	0.24
Finance Insurance Property	5.96	5.03	4.03	1.71	1.70	1.50	1.28	0.71	0.33	1.57	3.44	2.95
Manufacturing	35.75	31.81	30.56	30.54	29.77	29.93	32.36	30.91	33.11	28.35	32.01	31.72
Mining and Quarrying	0.04	0.09	0.13	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.04
Transport Storage Communications	7.21	9.05	10.69	9.95	9.85	7.57	5.94	5.33	4.68	7.09	8.36	8.06
Wholesale Retail and Restaurant	20.82	18.10	18.28	18.73	18.78	19.10	19.91	20.96	21.74	16.54	19.32	19.36
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	8400	6498	4545	3861	4233	3408	2577	1689	897	381	36489	
Not Specified/Not Applicable (Excluded)	330	177	93	105	75	81	81	39	18	3	1002	
Age Structure	0.23	0.18	0.12	0.11	0.12	0.09	0.07	0.05	0.02	0.01	1.00	

(continued over)

APPENDIX F.3 (continued)

F.3.3: Industrial Category (Full-time plus Part-time, Employed Only), Percentage at Each Age, by Ethnicity, Males, 1981

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Agriculture Hunting Forestry Fishing	15.21	12.63	13.58	13.26	13.52	13.31	12.35	11.90	11.32	15.64	13.17	13.35
Building and Construction	8.25	10.72	9.73	9.63	9.81	10.00	9.83	9.16	8.29	6.09	9.44	9.58
Community Social Personal	15.23	19.47	21.29	20.50	19.41	18.34	18.87	19.16	20.41	19.75	19.31	19.08
Electricity Gas and Water	1.24	1.60	1.56	1.47	1.40	1.58	1.79	1.96	2.04	1.65	1.61	1.55
Finance Insurance Property	4.48	5.98	6.48	7.50	7.49	6.85	6.07	5.67	5.49	7.10	6.33	6.22
Manufacturing	27.49	25.76	23.51	23.05	23.04	23.56	24.58	24.52	25.22	24.05	24.44	24.69
Mining and Quarrying	0.32	0.44	0.50	0.46	0.47	0.45	0.53	0.57	0.57	0.55	0.48	0.46
Transport Storage Communications	6.02	8.78	9.55	9.68	9.98	10.50	10.77	11.32	10.74	8.47	9.59	9.19
Wholesale Retail and Restaurant	21.75	14.61	13.80	14.45	14.89	15.39	15.20	15.73	15.91	16.71	15.64	15.87
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	69687	94491	89460	95178	78519	69297	61935	66342	58440	27144	710493	
Not Specified/Not Applicable (Excluded)	1149	1032	978	1056	909	897	870	915	843	462	9111	
Age Structure	0.10	0.13	0.13	0.13	0.11	0.10	0.09	0.09	0.08	0.04	1.00	
MAORI ETHNIC GROUP												
Agriculture Hunting Forestry Fishing	18.37	13.37	13.33	12.62	12.83	13.78	13.41	13.79	13.26	18.30	14.14	13.96
Building and Construction	8.31	11.81	12.11	12.02	12.21	12.12	13.20	12.78	14.27	12.11	11.64	12.03
Community Social Personal	17.18	17.25	15.67	14.89	14.19	14.36	14.08	14.27	15.08	13.40	15.62	15.23
Electricity Gas and Water	0.98	2.03	2.63	2.47	2.60	2.82	2.50	2.77	2.02	1.55	2.20	2.29
Finance Insurance Property	1.58	1.79	2.03	2.13	2.06	2.12	1.46	1.42	1.32	1.55	1.83	1.80
Manufacturing	36.45	36.43	34.73	33.99	32.85	30.95	30.99	31.71	33.30	31.96	34.21	33.62
Mining and Quarrying	0.61	0.67	0.86	0.92	1.13	1.04	1.25	1.22	1.42	0.77	0.90	0.97
Transport Storage Communications	4.47	8.34	11.37	13.48	15.20	15.98	16.12	16.16	13.66	13.14	11.43	12.56
Wholesale Retail and Restaurant	12.06	8.30	7.28	7.48	6.92	6.85	6.99	5.88	5.67	7.22	8.04	7.54
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	12888	16083	12561	10434	7716	7230	5751	4437	2964	1164	81228	
Not Specified/Not Applicable (Excluded)	357	258	189	159	129	138	108	84	60	24	1506	
Age Structure	0.16	0.20	0.15	0.13	0.09	0.09	0.07	0.05	0.04	0.01	1.00	

(continued over)

APPENDIX F.3 (continued)

F.3.4: Industrial Category (Full-time plus Part-time, Employed Only), Percentage at Each Age, by Ethnicity, Females, 1981

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Agriculture Hunting Forestry Fishing	4.11	4.33	7.99	10.46	9.80	9.00	8.12	7.34	6.83	7.56	7.39	7.09
Building and Construction	0.67	0.85	1.52	2.07	1.85	1.47	1.39	1.33	0.94	0.78	1.32	1.29
Community Social Personal	29.68	40.37	39.90	36.60	36.36	37.03	37.16	37.36	38.38	39.72	36.94	36.56
Electricity Gas and Water	0.33	0.39	0.27	0.22	0.24	0.26	0.29	0.33	0.35	0.09	0.29	0.30
Finance Insurance Property	15.00	14.49	10.40	8.12	7.31	6.97	6.27	5.90	6.26	6.68	9.59	10.43
Manufacturing	14.92	14.12	13.47	14.67	15.80	16.64	16.83	17.24	17.49	15.51	15.42	15.16
Mining and Quarrying	0.08	0.08	0.09	0.05	0.06	0.05	0.06	0.08	0.06	0.03	0.07	0.07
Transport Storage Communications	5.37	6.61	5.97	4.88	4.51	4.56	4.36	4.35	4.52	4.10	5.13	5.29
Wholesale Retail and Restaurant	29.84	18.76	20.41	22.93	24.06	24.02	25.52	26.07	25.16	25.53	23.84	23.83
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	58881	69690	49209	53136	51297	48288	39891	35940	25536	9963	441831	
Not Specified/Not Applicable (Excluded)	792	486	462	654	627	567	477	486	408	201	5160	
Age Structure	0.13	0.16	0.11	0.12	0.12	0.11	0.09	0.08	0.06	0.02	1.00	
MAORI ETHNIC GROUP												
Agriculture Hunting Forestry Fishing	9.48	7.42	8.03	8.39	7.28	6.48	6.52	6.16	5.97	7.20	7.74	7.49
Building and Construction	0.62	0.67	0.94	0.75	1.11	0.73	0.79	1.34	0.48	0.00	0.79	0.80
Community Social Personal	25.02	31.55	30.50	31.79	32.47	36.72	38.33	40.03	42.00	43.20	32.11	33.43
Electricity Gas and Water	0.17	0.21	0.36	0.22	0.19	0.07	0.26	0.27	0.48	0.00	0.22	0.22
Finance Insurance Property	5.92	6.11	4.80	3.28	2.47	2.00	2.11	1.34	1.91	3.20	4.08	3.67
Manufacturing	30.87	28.66	27.53	27.11	27.59	27.70	26.43	27.98	27.21	23.20	28.26	27.95
Mining and Quarrying	0.03	0.21	0.00	0.22	0.12	0.13	0.09	0.00	0.00	0.00	0.11	0.10
Transport Storage Communications	5.75	8.20	8.50	9.63	10.19	9.08	7.58	6.56	6.21	5.60	8.03	8.04
Wholesale Retail and Restaurant	22.14	16.96	19.34	18.61	18.58	17.09	17.89	16.33	15.75	17.60	18.67	18.29
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	8766	8490	5754	5577	4860	4494	3405	2241	1257	375	45219	
Not Specified/Not Applicable (Excluded)	261	144	78	84	63	75	45	63	18	6	837	
Age Structure	0.19	0.19	0.13	0.12	0.11	0.10	0.08	0.05	0.03	0.01	1.00	

(continued over)

APPENDIX F.3 (continued)

F.3.5: Industrial Category (Full-time plus Part-time, Employed Only), Percentage at Each Age, by Ethnicity, Males, 1986

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Agriculture Hunting Forestry Fishing	12.96	12.32	12.92	13.18	12.83	13.04	12.89	12.20	12.00	18.28	12.93	12.83
Building and Construction	10.81	10.97	11.75	11.09	10.38	10.27	10.31	10.11	9.56	7.21	10.55	10.77
Community Social Personal	13.01	15.23	17.86	19.50	19.44	18.75	18.01	18.77	19.08	19.70	17.86	17.26
Electricity Gas and Water	1.20	1.57	1.44	1.50	1.41	1.49	1.69	1.90	2.08	1.57	1.56	1.51
Finance Insurance Property	5.36	7.20	7.47	7.69	8.51	8.01	7.50	6.59	6.18	8.24	7.33	7.22
Manufacturing	25.18	26.07	23.48	21.98	21.72	21.86	22.38	23.26	23.34	19.49	23.10	23.55
Mining and Quarrying	0.39	0.64	0.68	0.67	0.54	0.55	0.57	0.66	0.64	0.40	0.59	0.59
Transport Storage Communications	5.54	7.58	8.39	8.99	9.09	9.78	9.98	10.35	10.41	8.68	8.83	8.41
Wholesale Retail and Restaurant	25.56	18.41	16.01	15.41	16.08	16.24	16.67	16.16	16.70	16.44	17.25	17.84
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	64266	94401	97290	93219	96459	78540	67692	59211	58566	25677	735321	
Not Specified/Not Applicable (Excluded)	576	789	783	768	786	615	558	474	492	312	6153	
Age Structure	0.09	0.13	0.13	0.13	0.13	0.11	0.09	0.08	0.08	0.03	1.00	
MAORI ETHNIC GROUP												
Agriculture Hunting Forestry Fishing	15.46	12.73	12.72	13.05	11.32	12.21	12.90	13.35	13.08	20.39	13.11	13.13
Building and Construction	10.01	13.36	14.19	14.63	14.33	13.55	14.17	14.48	15.12	12.67	13.50	13.77
Community Social Personal	16.76	15.38	15.02	14.44	14.66	14.02	14.08	15.17	15.12	13.77	15.06	14.88
Electricity Gas and Water	1.08	1.77	2.34	2.54	2.59	2.76	3.11	2.63	2.94	1.93	2.23	2.39
Finance Insurance Property	2.30	2.53	2.47	2.70	2.75	2.37	2.26	1.76	1.78	3.03	2.43	2.40
Manufacturing	34.00	35.16	34.50	31.89	32.29	31.58	30.04	29.59	29.27	25.07	32.82	32.06
Mining and Quarrying	0.45	0.84	1.07	1.07	1.42	1.38	1.51	1.38	1.60	1.93	1.08	1.20
Transport Storage Communications	4.28	7.17	9.13	11.05	12.65	14.80	15.16	14.92	14.77	14.05	10.21	11.41
Wholesale Retail and Restaurant	15.66	11.06	8.57	8.65	7.99	7.33	6.78	6.71	6.32	7.16	9.55	8.77
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	11991	16734	14358	11241	9273	6954	6372	4785	3372	1089	86169	
Not Specified/Not Applicable (Excluded)	318	312	225	138	153	93	90	84	69	15	1497	
Age Structure	0.14	0.19	0.17	0.13	0.11	0.08	0.07	0.06	0.04	0.01	1.00	

(continued over)

APPENDIX F.3 (continued)

F.3.6: Industrial Category (Full-time plus Part-time, Employed Only), Percentage at Each Age, by Ethnicity, Females, 1986

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Agriculture Hunting Forestry Fishing	4.14	4.84	7.71	10.46	10.20	9.52	9.36	9.33	9.24	12.44	8.22	7.65
Building and Construction	0.96	1.04	1.77	2.26	2.12	1.86	1.65	1.62	1.35	1.11	1.63	1.57
Community Social Personal	21.75	31.79	37.35	36.63	35.98	36.69	36.96	37.60	38.51	38.03	34.50	33.34
Electricity Gas and Water	0.45	0.43	0.33	0.24	0.23	0.27	0.35	0.34	0.38	0.21	0.33	0.34
Finance Insurance Property	17.54	16.66	13.11	10.23	9.47	8.39	7.77	6.74	6.30	6.90	11.25	12.33
Manufacturing	14.70	14.99	12.31	12.41	13.41	13.73	14.28	14.17	14.37	11.92	13.74	13.79
Mining and Quarrying	0.10	0.13	0.13	0.07	0.08	0.08	0.10	0.09	0.07	0.06	0.09	0.10
Transport Storage Communications	5.49	6.61	6.02	4.98	4.79	4.58	4.65	4.53	4.48	4.70	5.24	5.40
Wholesale Retail and Restaurant	34.87	23.51	21.28	22.73	23.72	24.88	24.87	25.58	25.31	24.63	25.00	25.48
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	56433	76551	62580	59613	70659	60354	50604	37575	27348	9963	511680	
Not Specified/Not Applicable (Excluded)	369	444	405	393	462	387	336	273	234	132	3435	
Age Structure	0.11	0.15	0.12	0.12	0.14	0.12	0.10	0.07	0.05	0.02	1.00	
MAORI ETHNIC GROUP												
Agriculture Hunting Forestry Fishing	7.16	7.49	7.78	9.00	8.15	7.93	7.22	6.95	8.26	10.74	7.78	7.85
Building and Construction	1.09	1.30	1.61	1.64	1.45	0.97	0.96	0.74	0.55	1.34	1.26	1.22
Community Social Personal	25.43	29.14	31.66	30.82	32.18	34.99	38.38	43.79	44.22	45.64	32.00	33.46
Electricity Gas and Water	0.19	0.21	0.15	0.22	0.37	0.30	0.34	0.21	0.37	0.67	0.24	0.26
Finance Insurance Property	7.72	7.73	5.83	4.48	3.42	2.30	2.48	1.79	1.65	2.01	5.12	4.49
Manufacturing	27.26	27.63	25.53	25.74	26.00	25.61	24.97	21.47	23.85	21.48	25.97	25.61
Mining and Quarrying	0.09	0.12	0.26	0.13	0.14	0.24	0.00	0.32	0.18	0.67	0.16	0.17
Transport Storage Communications	5.12	7.25	8.14	8.09	9.09	9.44	8.73	7.79	5.69	4.70	7.60	7.79
Wholesale Retail and Restaurant	25.95	19.13	19.04	19.89	19.20	18.22	16.92	16.95	15.23	12.75	19.87	19.15
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	9675	10131	8178	6969	6405	4956	4362	2850	1635	447	55608	
Not Specified/Not Applicable (Excluded)	204	147	87	84	78	72	60	42	21	9	804	
Age Structure	0.17	0.18	0.15	0.13	0.12	0.09	0.08	0.05	0.03	0.01	1.00	

(continued over)

APPENDIX F.3 (continued)

F.3.7: Industrial Category (Full-time plus Part-time, Employed Only), Percentage at Each Age, by Ethnicity, Males, 1991

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Agriculture Hunting Forestry Fishing	13.79	10.57	11.79	12.02	12.41	12.12	12.34	13.09	14.06	22.83	12.65	12.31
Building and Construction	9.13	11.03	10.17	11.19	10.25	9.86	9.69	9.84	9.85	7.25	10.10	10.23
Community Social Personal	12.11	15.51	16.93	18.96	20.65	20.51	20.17	19.99	21.16	20.06	18.71	18.08
Electricity Gas and Water	0.37	1.04	1.20	1.23	1.30	1.21	1.23	1.45	1.70	0.98	1.20	1.15
Finance Insurance Property	5.51	10.55	10.77	11.18	11.46	12.24	11.41	10.73	9.66	11.67	10.76	10.55
Manufacturing	18.98	22.03	21.68	19.81	18.84	18.61	18.90	18.94	19.13	14.25	19.54	19.90
Mining and Quarrying	0.21	0.47	0.57	0.63	0.62	0.51	0.52	0.51	0.42	0.43	0.52	0.51
Transport Storage Communications	2.63	6.06	7.77	7.96	8.20	8.29	8.73	8.46	7.26	5.84	7.45	7.22
Wholesale Retail and Restaurant	37.26	22.73	19.13	17.03	16.28	16.65	17.01	16.99	16.76	16.69	19.08	20.05
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	43263	72120	81504	89025	85176	87408	70284	57645	44397	22383	653205	
Not Specified/Not Applicable (Excluded)	804	1140	1332	1362	1356	1386	1170	1008	879	645	11082	
Age Structure	0.07	0.11	0.12	0.14	0.13	0.13	0.11	0.09	0.07	0.03	1.00	
MAORI ETHNIC GROUP												
Agriculture Hunting Forestry Fishing	16.74	10.79	10.97	11.00	10.91	10.33	10.02	11.25	13.10	21.95	11.60	11.68
Building and Construction	8.32	10.55	11.02	12.16	12.65	12.27	11.24	10.96	11.38	10.80	11.23	11.36
Community Social Personal	16.30	19.58	19.37	20.09	19.51	19.46	20.72	21.00	23.22	25.09	19.69	20.06
Electricity Gas and Water	0.39	1.19	1.84	2.36	2.41	2.12	2.67	2.63	2.07	1.39	1.90	2.02
Finance Insurance Property	3.45	5.31	5.47	4.67	5.23	5.21	4.74	4.91	4.02	3.48	4.89	4.85
Manufacturing	24.27	28.88	29.10	28.47	27.37	27.27	27.16	26.41	24.48	20.56	27.46	27.15
Mining and Quarrying	0.30	0.60	0.78	0.86	0.96	1.28	1.22	1.49	1.49	1.05	0.91	1.00
Transport Storage Communications	2.95	6.83	9.15	10.17	11.16	11.69	13.43	12.74	11.84	9.41	9.56	10.19
Wholesale Retail and Restaurant	27.28	16.27	12.29	10.23	9.79	10.37	8.81	8.61	8.39	6.27	12.76	11.69
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	6093	10065	10422	9768	8088	6798	4938	4215	2610	861	63858	
Not Specified/Not Applicable (Excluded)	363	399	381	351	270	249	183	168	132	42	2538	
Age Structure	0.10	0.16	0.16	0.15	0.13	0.11	0.08	0.07	0.04	0.01	1.00	

(continued over)

APPENDIX F.3 (continued)

F.3.8: Industrial Category (Full-time plus Part-time, Employed Only), Percentage at Each Age, by Ethnicity, Females, 1991

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Agriculture Hunting Forestry Fishing	4.13	3.75	6.25	9.06	8.52	8.05	8.47	9.79	10.96	16.58	7.70	7.24
Building and Construction	0.74	0.98	1.52	2.18	2.01	1.69	1.55	1.56	1.49	1.35	1.57	1.53
Community Social Personal	21.02	30.52	35.78	40.13	42.34	41.71	41.48	41.74	42.24	40.58	37.88	36.66
Electricity Gas and Water	0.25	0.37	0.35	0.26	0.29	0.30	0.25	0.33	0.28	0.23	0.30	0.30
Finance Insurance Property	14.19	22.07	18.75	14.14	12.98	12.82	11.71	10.21	9.44	8.36	14.36	15.04
Manufacturing	9.33	11.44	10.71	9.59	9.61	10.30	10.66	10.64	10.28	8.92	10.28	10.27
Mining and Quarrying	0.05	0.11	0.13	0.08	0.07	0.08	0.06	0.05	0.03	0.00	0.08	0.08
Transport Storage Communications	3.30	6.02	5.93	4.60	3.90	3.79	3.65	3.40	2.79	2.60	4.28	4.44
Wholesale Retail and Restaurant	46.99	24.75	20.59	19.97	20.28	21.27	22.16	22.28	22.49	21.37	23.56	24.43
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	38769	62703	61569	61722	67263	74460	58206	43770	26136	10260	504858	
Not Specified/Not Applicable (Excluded)	666	849	936	1044	1161	1119	897	735	519	312	8238	
Age Structure	0.08	0.12	0.12	0.12	0.13	0.15	0.12	0.09	0.05	0.02	1.00	
MAORI ETHNIC GROUP												
Agriculture Hunting Forestry Fishing	5.63	4.90	6.29	6.62	6.19	5.99	5.61	5.87	5.81	7.82	5.91	5.94
Building and Construction	0.80	1.01	1.10	1.32	1.04	0.93	0.82	0.78	0.53	1.12	0.99	0.97
Community Social Personal	23.96	35.09	38.51	42.13	42.82	43.32	45.55	49.76	55.81	62.01	40.22	41.85
Electricity Gas and Water	0.23	0.28	0.26	0.26	0.33	0.11	0.22	0.00	0.18	0.00	0.23	0.21
Finance Insurance Property	9.45	13.03	10.64	8.20	7.56	6.43	5.61	4.30	3.52	2.79	8.45	7.86
Manufacturing	16.62	18.41	17.89	17.62	17.77	19.07	18.47	18.28	14.26	12.29	17.79	17.78
Mining and Quarrying	0.11	0.16	0.04	0.18	0.05	0.27	0.15	0.10	0.00	0.56	0.13	0.14
Transport Storage Communications	3.36	6.11	7.65	6.18	6.14	6.87	6.96	5.08	5.46	2.23	6.07	6.11
Wholesale Retail and Restaurant	39.84	21.00	17.63	17.49	18.10	17.00	16.60	15.84	14.44	11.17	20.20	19.14
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	5271	7413	6825	6843	6348	5505	4011	3069	1704	537	47526	
Not Specified/Not Applicable (Excluded)	291	246	216	255	213	207	120	102	60	36	1746	
Age Structure	0.11	0.16	0.14	0.14	0.13	0.12	0.08	0.06	0.04	0.01	1.00	

Notes: Standardisation = Maori standardised to age structure of European full-time plus part-time workforce (employed only), and vice-versa.

Source: Database A

APPENDIX F.4.1

Component Analysis of Industrial Distribution, Major Industries, Maori Ethnic Group and European Workforces (Full-time plus Part-time, Employed Only) Aged 15-64 Years, by Sex, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
COMMUNITY, PERSONAL, SOCIAL								
European	15.55	19.31	17.86	18.71	35.44	36.94	34.50	37.88
Maori	9.02	15.62	15.06	19.69	29.81	32.11	32.00	40.22
European (Standardised*)	15.28	19.08	17.26	18.08	35.63	36.56	33.34	36.66
Maori (Standardised*)	9.14	15.23	14.88	20.06	30.88	33.43	33.46	41.85
Component of observed difference (European minus Maori) due to:								
Underlying Differential	6.34	3.77	2.59	-1.48	5.19	3.98	1.19	-3.77
Age Structure	0.20	-0.08	0.21	0.50	0.44	0.85	1.31	1.42
Observed Differential	6.54	3.69	2.79	-0.98	5.63	4.83	2.51	-2.34
Effect of Age Structure^	3.14	-2.21	7.95	-33.75	8.49	21.46	110.17	-37.80
MANUFACTURING								
European	25.08	24.44	23.10	19.54	17.21	15.42	13.74	10.28
Maori	36.34	34.21	32.82	27.46	32.01	28.26	25.97	17.79
European (Standardised*)	25.35	24.69	23.55	19.90	16.76	15.16	13.79	10.27
Maori (Standardised*)	34.93	33.62	32.06	27.15	31.72	27.95	25.61	17.78
Component of observed difference (European minus Maori) due to:								
Underlying Differential	-10.42	-9.35	-9.11	-7.59	-14.88	-12.82	-12.03	-7.51
Age Structure	-0.84	-0.42	-0.61	-0.34	0.08	-0.02	-0.20	0.00
Observed Differential	-11.26	-9.77	-9.72	-7.93	-14.80	-12.84	-12.23	-7.51
Effect of Age Structure^	8.02	4.49	6.69	4.52	-0.54	0.18	1.68	0.02
WHOLESALE, RETAIL, RESTAURANT								
European	15.79	15.64	17.25	19.08	24.97	23.84	25.00	23.56
Maori	7.70	8.04	9.55	12.76	19.32	18.67	19.87	20.20
European (Standardised*)	15.77	15.87	17.84	20.05	24.41	23.83	25.48	24.43
Maori (Standardised*)	7.32	7.54	8.77	11.69	19.36	18.29	19.15	19.14
Component of observed difference (European minus Maori) due to:								
Underlying Differential	8.27	7.97	8.39	7.34	5.35	5.35	5.73	4.33
Age Structure	-0.19	-0.37	-0.68	-1.02	0.30	-0.18	-0.61	-0.97
Observed Differential	8.08	7.60	7.71	6.32	5.65	5.17	5.12	3.36
Effect of Age Structure^	-2.24	-4.61	-8.15	-13.90	5.65	-3.41	-10.58	-22.39
FINANCE, INSURANCE, PROPERTY								
European	5.77	6.33	7.33	10.76	8.86	9.59	11.25	14.36
Maori	1.57	1.83	2.43	4.89	3.44	4.08	5.12	8.45
European (Standardised*)	5.75	6.22	7.22	10.55	9.68	10.43	12.33	15.04
Maori (Standardised*)	1.53	1.80	2.40	4.85	2.95	3.67	4.49	7.86
Component of observed difference (European minus Maori) due to:								
Underlying Differential	4.21	4.47	4.85	5.79	6.08	6.13	6.99	6.55
Age Structure	-0.01	0.04	0.04	0.08	-0.65	-0.62	-0.85	-0.64
Observed Differential	4.20	4.51	4.89	5.87	5.42	5.51	6.13	5.91
Effect of Age Structure^	-0.34	0.86	0.82	1.42	-10.77	-10.17	-12.22	-9.76

Notes: *Maori standardised to age structure of European workforce, and vice-versa.

^ Percentage of Underlying Differential. Positive value denotes additive effect; Negative value denotes offsetting effect.

Industry Not Specified excluded.

Source: Database A (see Appendix F.3)

APPENDIX F.4.2

Component Analysis of Industrial Distribution, Selected (Remaining) Industries, Maori Ethnic Group and European Workforces (Full-time plus Part-time, Employed Only) Aged 15-64 Years, by Sex, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
AGRICULTURE, FORESTRY, HUNTING AND FISHING								
European	12.70	13.17	12.93	12.65	6.14	7.39	8.22	7.70
Maori	12.86	14.14	13.11	11.60	5.97	7.74	7.78	5.91
European (Standardised*)	12.63	13.35	12.83	12.31	5.90	7.09	7.65	7.24
Maori (Standardised*)	13.24	13.96	13.13	11.68	6.01	7.49	7.85	5.94
Component of observed difference (European minus Maori) due to:								
Underlying Differential	-0.38	-0.79	-0.24	0.84	0.03	-0.37	0.12	1.54
Age Structure	0.23	-0.18	0.06	0.21	0.14	0.03	0.32	0.24
Observed Differential	-0.16	-0.97	-0.18	1.05	0.17	-0.34	0.44	1.79
Effect of Age Structure^	-59.00	22.95	-24.14	25.64	531.27	-7.42	254.77	15.80
BUILDING AND CONSTRUCTION								
European	12.75	9.44	10.55	10.10	1.63	1.32	1.63	1.57
Maori	16.41	11.64	13.50	11.23	0.78	0.79	1.26	0.99
European (Standardised*)	13.36	9.58	10.77	10.23	1.64	1.29	1.57	1.53
Maori (Standardised*)	16.74	12.03	13.77	11.36	0.73	0.80	1.22	0.97
Component of observed difference (European minus Maori) due to:								
Underlying Differential	-3.52	-2.32	-2.97	-1.13	0.88	0.51	0.36	0.57
Age Structure	-0.14	0.12	0.02	0.00	-0.03	0.02	0.01	0.01
Observed Differential	-3.66	-2.20	-2.95	-1.13	0.85	0.53	0.37	0.57
Effect of Age Structure^	3.94	-5.34	-0.70	-0.26	-3.44	4.63	2.57	1.15
TRANSPORT, STORAGE, COMMUNICATIONS								
European	10.19	9.59	8.83	7.45	5.32	5.13	5.24	4.28
Maori	12.90	11.43	10.21	9.56	8.36	8.03	7.60	6.07
European (Standardised*)	9.81	9.19	8.41	7.22	5.53	5.29	5.40	4.44
Maori (Standardised*)	13.78	12.56	11.41	10.19	8.06	8.04	7.79	6.11
Component of observed difference (European minus Maori) due to:								
Underlying Differential	-3.34	-2.61	-2.19	-2.54	-2.79	-2.83	-2.38	-1.73
Age Structure	0.63	0.77	0.81	0.44	-0.26	-0.07	0.01	-0.06
Observed Differential	-2.72	-1.84	-1.38	-2.10	-3.04	-2.90	-2.36	-1.79
Effect of Age Structure^	-18.74	-29.42	-36.87	-17.19	9.29	2.56	-0.59	3.37
ELECTRICITY, GAS AND WATER								
European	1.64	1.61	1.56	1.20	0.38	0.29	0.33	0.30
Maori	2.20	2.20	2.23	1.90	0.26	0.22	0.24	0.23
European (Standardised*)	1.56	1.55	1.51	1.15	0.39	0.30	0.34	0.30
Maori (Standardised*)	2.23	2.29	2.39	2.02	0.24	0.22	0.26	0.21
Component of observed difference (European minus Maori) due to:								
Underlying Differential	-0.61	-0.67	-0.77	-0.79	0.14	0.07	0.08	0.08
Age Structure	0.05	0.07	0.10	0.08	-0.02	0.00	0.00	-0.01
Observed Differential	-0.56	-0.60	-0.67	-0.71	0.12	0.07	0.09	0.07
Effect of Age Structure^	-8.48	-10.91	-13.19	-10.25	-13.92	0.65	4.63	-11.08
MINING AND QUARRYING								
European	0.52	0.48	0.59	0.52	0.06	0.07	0.09	0.08
Maori	0.99	0.90	1.08	0.91	0.05	0.11	0.16	0.13
European (Standardised*)	0.49	0.46	0.59	0.51	0.06	0.07	0.10	0.08
Maori (Standardised*)	1.10	0.97	1.20	1.00	0.04	0.10	0.17	0.14
Component of observed difference (European minus Maori) due to:								
Underlying Differential	-0.54	-0.47	-0.55	-0.44	0.01	-0.03	-0.07	-0.06
Age Structure	0.07	0.05	0.06	0.05	0.00	0.00	0.00	0.00
Observed Differential	-0.47	-0.42	-0.49	-0.39	0.01	-0.04	-0.06	-0.05
Effect of Age Structure^	-13.06	-10.46	-10.97	-10.66	-35.28	10.67	-6.55	-2.77

Notes: *Maori standardised to age structure of European workforce, and vice-versa.
^ Percentage of Underlying Differential. Positive value denotes additive effect; Negative value denotes offsetting effect.
Industry Not Specified excluded.

Source: Database A (see Appendix F.3)

APPENDIX F.4.3

Index of Ethnic Dissimilarity for Industrial Structure, Maori and European Workforces, by Sex, 1976-1991

	1976	1981	1986	1991	1976	1981	1986	1991
Unstandardised (Crude)	18.82	15.79	15.39	13.24	17.84	16.12	14.65	11.70
Standardised*	19.12	16.72	16.38	14.26	17.26	15.57	14.50	13.37

Notes: * Maori data standardised to age structure of European workforce, and vice versa;
Industry Not Specified excluded.

Source: Database A (see Appendices F.8.1 and F.8.2)

APPENDIX F.5

Occupational Structure of the Maori and Non-Maori Workforces (Full-time plus Part-time, Employed Only), by Sex, 1956-1981

	1956	1961	1966	1971	1976	1981	Ratio (a)
			MALES				
NON-MAORI							
Administrative/Managerial	6.4	7.4	7.5	8.0	8.6	8.8	1.4
Clerical workers	7.5	7.9	8.3	6.8	5.9	5.4	0.7
Professionals	7.4	7.9	8.6	11.0	12.8	12.5	1.7
Sales workers	6.9	6.9	7.2	7.1	6.8	6.9	1.0
Supervisors	0.8	0.7	0.7	4.2	4.4	3.9	4.9
Skilled manual workers	37.7	36.7	36.7	31.3	31.3	31.2	0.8
Unskilled manual workers	33.0	32.3	30.6	30.9	28.6	28.2	0.9
Not Specified	0.3	0.2	0.3	0.9	1.6	3.0	10.0
TOTAL	100.0	100.0	99.9	100.2	100.0	99.9	1.0
Number	591352	633621	701896	734864	803525	806751	
MAORI							
Administrative/Managerial	0.4	0.5	0.6	1.0	1.4	1.3	3.3
Clerical workers	1.5	1.8	2.0	2.0	2.1	2.0	1.3
Professionals	1.6	1.7	1.8	2.3	3.0	2.7	1.7
Sales workers	0.7	0.8	1.1	1.1	1.4	1.4	2.0
Supervisors	1.1	0.5	0.7	1.5	2.2	2.2	2.0
Skilled manual workers	24.3	24.5	25.7	20.1	21.0	19.3	0.8
Unskilled manual workers	68.9	68.8	66.9	68.4	63.4	60.9	0.9
Not Specified	1.6	1.4	1.3	3.5	5.4	10.2	6.4
TOTAL	100.1	100.0	100.1	99.9	99.9	100.0	1.0
Number	31406	36885	43699	50105	61573	69852	
			FEMALES				
NON-MAORI							
Admin/Managers	1.7	2.0	2.7	2.2	2.8	3.2	1.9
Clerical workers	27.9	29.4	30.2	32.0	32.3	31.3	1.1
Professionals	16.4	16.7	17.0	17.9	18.9	18.6	1.1
Sales workers	13.6	13.5	12.3	11.1	11.2	10.7	0.8
Supervisors	0.1	0.0	0.0	0.8	1.2	1.4	14.0
Skilled manual workers	14.6	13.2	12.8	11.8	11.0	10.8	0.7
Unskilled manual workers	25.4	25.0	24.4	23.3	20.9	21.0	0.8
NS	0.3	0.2	0.5	1.0	1.8	3.2	10.7
TOTAL	100.0	100.0	99.9	100.1	100.1	100.2	1.0
Number	185665	213924	265930	313073	379080	421398	
MAORI							
Admin/Managers	0.5	0.4	0.5	0.5	1.0	1.0	2.0
Clerical workers	7.3	7.4	8.0	10.7	12.9	12.2	1.7
Professionals	10.6	9.9	8.8	7.4	8.3	7.1	0.7
Sales workers	2.9	3.4	3.6	3.7	4.8	4.0	1.4
Supervisors	0.1	0.0	0.0	0.4	1.0	0.9	9.0
Skilled manual workers	13.5	15.5	16.0	15.9	15.4	13.0	1.0
Unskilled manual workers	63.5	61.8	59.1	53.9	47.7	48.3	0.8
NS	1.8	1.5	3.9	7.5	9.0	13.5	7.5
TOTAL	100.2	99.9	99.9	100.0	100.1	100.0	1.0
Number	8439	10933	14514	20793	28155	34329	
INDEX OF DISSIMILARITY (Not specified's included)							
Males	36.8	37.7	37.3	40.1	38.6	39.0	1.1
Females	39.6	40.4	41.3	41.2	38.4	39.8	1.0

Notes: (a) Percentage for 1981 Indexed to 1956 (1956=1.00)

Source: Brosnan 1985, Tables 1, 2 and 3.

APPENDIX F.6

F.6.1: Total Workforce in Each Occupation (Full-time plus Part-time, Employed Only, 15-64 Years) and Percentage in Each Occupation Aged Less Than 30 Years, by Sex, 1976

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	<30 Years
ALL MALES												
Administrative Managerial	96	960	3585	5286	5511	5166	5505	4866	3459	2055	36489	12.72
Agricultural/Forestry Workers Fishermen and Hunters	11361	12618	13944	12129	11130	9630	10428	9240	7818	5610	103908	36.50
Clerical	6336	9567	8646	6648	5421	5145	6225	7788	6888	4458	67122	36.57
Production Transport Equipment Operators and Labourers	53124	63063	55626	42531	38106	33051	35163	31116	25509	14049	391338	43.90
Professional Technical	4515	14535	18741	14592	11949	9447	9525	8328	5700	3672	101004	37.42
Sales Workers	6117	7326	11016	9918	9210	7917	8568	7674	5961	3600	77307	31.64
Service Workers	2736	4641	5079	4026	3552	3195	3621	3219	2898	1977	34944	35.65
Total	84285	112710	116637	95130	84879	73551	79035	72231	58233	35421	812112	38.62
Not Specified/Not Applicable (Excluded)	1143	1200	1125	897	906	840	1008	879	804	543	9345	37.11
ALL FEMALES												
Administrative Managerial	21	207	396	462	477	417	399	366	255	135	3135	19.90
Agricultural/Forestry Workers Fishermen and Hunters	2100	2253	3294	3861	3915	3216	2673	2022	1233	618	25185	30.36
Clerical	28632	30213	17865	13416	13620	12147	12039	10614	6396	2943	147885	51.87
Production Transport Equipment Operators and Labourers	11232	9057	7131	7197	7884	7338	7287	6258	4179	1764	69327	39.55
Professional Technical	12660	20349	11583	7875	8301	7191	6408	4776	3027	1452	83622	53.33
Sales Workers	9483	5217	4395	4851	6378	6336	7146	5943	4098	1989	55836	34.20
Service Workers	9051	7638	7365	7098	7356	6453	6753	6198	4722	2619	65253	36.86
Total	73179	74934	52029	44760	47931	43098	42705	36177	23910	11520	450243	44.45
Not Specified/Not Applicable (Excluded)	630	516	408	375	372	357	378	327	279	132	3774	41.18

APPENDIX F.6 (continued)

F.6.2: Total Workforce in Each Occupation (Full-time plus Part-time, Employed Only, 15-64 Years) and Percentage in Each Occupation Aged Less Than 30 Years, by Sex, 1991

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	<30 Years
ALL MALES												
Administrative Managerial	153	1554	5043	8682	10926	12858	10044	7302	4386	2124	63072	10.70
Agricultural/Forestry Workers Fishermen and Hunters	7278	9315	11412	12480	11973	11679	9480	8424	7086	5526	94653	29.59
Clerical	3426	8226	7353	6699	6120	6582	5493	4926	4098	1920	54843	34.65
Production Transport Equipment Operators and Labourers	22764	42408	42906	42354	36273	33561	26631	22497	17085	6180	292659	36.93
Professional Technical	1800	10575	15741	18999	18921	18813	14202	10623	7533	4050	121257	23.19
Sales Workers	10119	8799	10683	10713	10254	10908	8697	6876	5184	2442	84675	34.96
Service Workers	5970	7665	7929	7851	6600	6099	4701	4098	3357	1659	55929	38.56
Total	51510	88542	101067	107778	101067	100500	79248	64746	48729	23901	767088	31.43
Not Specified/Not Applicable (Excluded)	1338	1395	1383	1467	1380	1248	1104	915	840	639	11709	35.15
ALL FEMALES												
Administrative Managerial	135	1140	2559	2970	3144	3348	2439	1530	765	339	18369	20.87
Agricultural/Forestry Workers Fishermen and Hunters	2016	2742	4074	5619	5706	5805	4746	4095	2682	1530	39015	22.64
Clerical	15417	31134	25368	21432	23064	25773	19800	14082	8034	2802	186906	38.48
Production Transport Equipment Operators and Labourers	4518	7770	6810	6162	6423	6933	5649	4173	2478	777	51693	36.95
Professional Technical	2001	13080	18462	19746	20739	20424	14673	10518	6207	2259	128109	26.18
Sales Workers	11661	8736	7752	7671	8685	9909	7989	6195	3621	1419	73638	38.23
Service Workers	10314	11415	10209	10905	11325	12306	9867	8049	4941	1833	91164	35.03
Total	46062	76017	75234	74505	79086	84498	65163	48642	28728	10959	588894	33.51
Not Specified/Not Applicable (Excluded)	1215	1122	1206	1368	1377	1284	1017	858	654	444	10545	33.60

Source: Database A

APPENDIX F.7

F.7.1: Occupational Category (Full-time plus Part-time, Employed Only, Workforce aged 15-64 years), By Ethnicity, Males, 1976

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Administrative Managerial	0.13	0.97	3.41	6.18	7.21	7.72	7.49	7.11	6.23	6.00	4.97	4.12
Agricultural/Forestry Workers Fishermen and Hunters	13.60	11.51	12.46	13.22	13.58	13.37	13.25	12.83	13.38	15.96	13.08	12.93
Clerical	8.37	9.33	7.93	7.33	6.70	7.33	8.24	11.22	12.26	13.02	8.81	8.45
Production Transport Equipment Operators and Labourers	60.56	52.30	43.86	41.00	41.29	42.05	42.29	41.23	42.35	38.18	45.06	47.09
Professional Technical	6.01	14.37	17.54	16.66	15.26	13.75	12.76	12.10	10.27	10.85	13.45	13.35
Sales Workers	7.99	7.23	10.36	11.30	11.75	11.46	11.41	11.05	10.56	10.47	10.26	9.84
Service Workers	3.33	4.30	4.44	4.31	4.21	4.32	4.57	4.46	4.96	5.51	4.37	4.22
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	69024	92817	99213	82194	73077	64437	71205	66378	53820	32850	705015	
Not Specified/Not Applicable (Excluded)	654	564	555	444	468	450	609	612	564	423	5343	
Age Structure	0.10	0.13	0.14	0.12	0.10	0.09	0.10	0.09	0.08	0.05	1.00	
MAORI ETHNIC GROUP												
Administrative Managerial	0.00	0.26	1.04	1.48	1.87	1.81	1.77	1.51	1.79	2.54	1.05	1.29
Agricultural/Forestry Workers Fishermen and Hunters	14.30	11.60	11.27	11.88	12.39	12.94	14.55	14.55	17.22	17.09	12.88	13.32
Clerical	3.24	3.75	3.93	4.28	4.51	4.41	4.00	5.18	4.90	4.16	4.03	4.19
Production Transport Equipment Operators and Labourers	74.90	74.64	71.51	70.59	68.63	68.19	68.67	68.31	66.03	64.67	71.29	70.22
Professional Technical	2.29	4.58	5.34	4.75	5.36	5.39	4.24	4.35	3.23	3.93	4.40	4.45
Sales Workers	3.04	2.44	3.28	3.38	3.60	3.63	2.94	2.51	2.51	3.00	3.06	3.05
Service Workers	2.24	2.73	3.63	3.64	3.63	3.63	3.83	3.60	4.31	4.62	3.28	3.49
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	11940	13758	11235	8334	7842	6120	5094	3588	2508	1299	71718	
Not Specified/Not Applicable (Excluded)	342	252	168	141	195	159	168	126	93	42	1686	
Age Structure	0.17	0.19	0.16	0.12	0.11	0.09	0.07	0.05	0.03	0.02	1.00	

(continued over)

APPENDIX F.7 (continued)

F.7.2: Occupational Category (Full-time plus Part-time, Employed Only, Workforce aged 15-64 years), By Ethnicity, Females, 1976

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Administrative Managerial	0.03	0.29	0.83	1.10	1.07	1.04	0.99	1.05	1.11	1.25	0.75	0.66
Agricultural/Forestry Workers Fishermen and Hunters	2.52	2.90	6.64	9.14	8.64	7.76	6.45	5.65	5.11	5.30	5.72	5.51
Clerical	41.35	42.39	36.17	31.91	30.16	30.04	29.60	30.60	27.75	26.15	34.50	35.75
Production Transport Equipment Operators and Labourers	11.85	8.86	10.44	13.19	14.04	15.05	15.38	16.18	16.36	14.33	12.91	12.41
Professional Technical	18.92	29.34	24.13	18.87	18.39	17.39	15.52	13.62	13.08	13.16	19.74	20.54
Sales Workers	13.60	7.13	8.74	11.28	13.98	15.24	17.40	16.84	17.51	17.58	12.93	12.34
Service Workers	11.72	9.09	13.06	14.50	13.72	13.48	14.66	16.05	19.09	22.22	13.45	12.79
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	61716	64149	44268	38451	41388	37902	38493	33117	21969	10530	391983	
Not Specified/Not Applicable (Excluded)	285	177	213	198	204	201	237	231	192	102	2040	
Age Structure	0.16	0.16	0.11	0.10	0.11	0.10	0.10	0.08	0.06	0.03	1.00	
MAORI ETHNIC GROUP												
Administrative Managerial	0.00	0.14	0.39	0.46	0.36	0.70	0.23	0.53	0.69	0.00	0.29	0.32
Agricultural/Forestry Workers Fishermen and Hunters	5.63	5.11	5.58	6.23	5.33	5.09	4.88	5.51	6.53	6.35	5.48	5.50
Clerical	25.18	27.29	23.10	18.08	17.68	14.21	12.91	11.19	8.25	12.70	20.63	19.07
Production Transport Equipment Operators and Labourers	36.33	29.94	31.30	32.85	30.75	31.49	33.26	31.08	35.05	30.16	32.55	32.34
Professional Technical	7.74	14.74	11.15	9.54	11.36	13.16	11.74	9.59	9.28	7.94	10.93	11.00
Sales Workers	9.11	5.52	6.04	6.31	6.82	7.63	8.14	7.10	6.53	8.73	7.16	7.10
Service Workers	16.00	17.25	22.44	26.54	27.70	27.72	28.84	34.99	33.68	34.13	22.96	24.68
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	8529	6573	4572	3900	4224	3420	2580	1689	873	378	36738	
Not Specified/Not Applicable (Excluded)	201	102	66	66	84	69	78	39	42	6	753	
Age Structure	0.23	0.18	0.12	0.11	0.11	0.09	0.07	0.05	0.02	0.01	1.00	

(continued over)

APPENDIX F.7 (continued)

F.7.3: Occupational Category (Full-time plus Part-time, Employed Only, Workforce aged 15-64 years), By Ethnicity, Males, 1981

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Administrative Managerial	0.15	0.94	3.43	6.77	8.72	8.90	8.43	7.69	7.12	6.63	5.61	4.63
Agricultural/Forestry Workers Fishermen	15.99	13.13	13.92	13.49	13.77	13.65	12.95	12.67	12.47	17.24	13.72	13.85
Clerical	8.58	9.00	7.53	7.24	7.17	7.13	8.16	9.63	11.71	12.02	8.47	8.25
Production Transport Equipment Operatc	53.76	51.47	42.96	38.42	37.42	38.53	40.15	40.77	40.60	34.76	42.54	44.28
Professional Technical	3.80	11.55	16.53	17.22	16.22	14.85	13.70	12.81	12.11	12.22	13.40	12.84
Sales Workers	11.21	7.13	9.19	10.74	11.06	11.30	10.95	10.74	10.35	10.62	10.18	9.94
Service Workers	6.50	6.78	6.44	6.13	5.65	5.63	5.66	5.69	5.64	6.51	6.08	6.20
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	69156	94113	89262	95115	78459	69222	61788	66147	58161	26973	708396	
Not Specified/Not Applicable (Excluded)	1680	1410	1176	1119	969	972	1017	1110	1122	633	11208	
Age Structure	0.10	0.13	0.13	0.13	0.11	0.10	0.09	0.09	0.08	0.04	1.00	
MAORI ETHNIC GROUP												
Administrative Managerial	0.05	0.31	0.95	1.92	1.90	2.02	1.59	1.45	1.45	2.64	1.11	1.32
Agricultural/Forestry Workers Fishermen	18.98	13.61	13.29	12.49	12.68	13.24	13.32	14.09	13.84	18.73	14.22	14.04
Clerical	4.01	4.37	3.90	4.19	4.62	5.27	4.88	4.97	6.10	4.49	4.46	4.62
Production Transport Equipment Operatc	64.43	68.80	67.31	65.61	65.40	64.40	65.45	66.44	65.91	61.21	66.17	65.91
Professional Technical	1.86	3.58	4.95	5.59	5.17	5.53	5.63	4.83	4.75	4.49	4.38	4.65
Sales Workers	4.57	2.46	3.14	3.93	3.63	3.67	3.87	2.69	2.58	2.37	3.43	3.35
Service Workers	6.09	6.87	6.46	6.26	6.60	5.86	5.25	5.52	5.37	6.07	6.23	6.11
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	12408	15585	12306	10302	7596	7113	5652	4344	2904	1137	79347	
Not Specified/Not Applicable (Excluded)	837	756	444	291	249	255	207	177	120	51	3387	
Age Structure	0.16	0.20	0.16	0.13	0.10	0.09	0.07	0.05	0.04	0.01	1.00	

(continued over)

APPENDIX F.7 (continued)

F.7.4: Occupational Category (Full-time plus Part-time, Employed Only, Workforce aged 15-64 years), By Ethnicity, Females, 1981

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Administrative Managerial	0.04	0.34	0.95	1.24	1.19	1.21	1.02	0.94	0.99	1.41	0.84	0.76
Agricultural/Forestry Workers Fishermen	4.08	4.17	7.41	9.78	9.22	8.32	7.55	6.71	6.19	6.87	6.92	6.67
Clerical	39.34	40.89	33.70	30.29	30.62	30.20	30.35	29.75	31.33	27.57	33.53	34.49
Production Transport Equipment Operatc	12.41	9.18	8.50	10.02	10.90	11.80	12.38	12.83	12.98	11.28	10.97	10.81
Professional Technical	13.27	27.11	26.56	20.69	19.57	19.22	17.85	15.96	14.92	15.03	19.98	20.29
Sales Workers	17.51	7.91	9.44	12.22	13.76	14.50	15.40	16.77	15.78	16.35	13.32	13.07
Service Workers	13.35	10.40	13.43	15.76	14.74	14.75	15.46	17.05	17.81	21.48	14.43	13.92
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	58728	69666	49239	53217	51414	48318	39849	35931	25479	9999	441840	
Not Specified/Not Applicable (Excluded)	945	510	432	573	510	537	519	495	465	165	5151	
Age Structure	0.13	0.16	0.11	0.12	0.12	0.11	0.09	0.08	0.06	0.02	1.00	
MAORI ETHNIC GROUP												
Administrative Managerial	0.00	0.18	0.42	0.65	0.50	0.61	0.62	0.40	0.49	0.83	0.37	0.41
Agricultural/Forestry Workers Fishermen	8.90	6.67	7.03	7.30	6.40	5.32	5.80	5.80	5.37	6.61	6.92	6.68
Clerical	24.33	27.80	23.60	19.63	18.07	17.32	14.01	12.26	13.17	10.74	21.15	19.87
Production Transport Equipment Operatc	33.92	29.61	28.00	28.23	29.44	27.90	26.32	28.44	26.34	24.79	29.45	28.94
Professional Technical	5.66	11.43	11.17	10.33	9.57	12.13	13.74	12.94	12.20	12.40	10.29	10.76
Sales Workers	11.39	5.57	5.66	6.65	6.40	6.40	6.24	7.28	5.61	7.44	7.17	6.92
Service Workers	15.80	18.74	24.12	27.20	29.63	30.32	33.27	32.88	36.83	37.19	24.66	26.42
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	8694	8451	5721	5547	4830	4452	3363	2226	1230	363	44877	
Not Specified/Not Applicable (Excluded)	333	183	111	114	93	117	87	78	45	18	1179	
Age Structure	0.19	0.19	0.13	0.12	0.11	0.10	0.07	0.05	0.03	0.01	1.00	

(continued over)

APPENDIX F.7 (continued)

F.7.5: Occupational Category (Full-time plus Part-time, Employed Only, Workforce aged 15-64 years), By Ethnicity, Males, 1986

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Administrative Managerial	0.22	1.71	4.75	8.41	11.77	12.84	11.78	10.52	9.01	8.64	7.80	6.47
Agricultural/Forestry Workers Fishermen	13.80	12.77	13.36	13.45	12.98	13.21	13.13	12.95	13.02	19.33	13.40	13.29
Clerical	9.15	9.05	6.98	6.53	6.53	7.20	7.67	9.17	10.56	10.37	7.99	7.95
Production Transport Equipment Operatc	53.64	50.27	43.91	38.33	35.04	34.48	36.04	37.54	38.33	30.50	40.54	42.73
Professional Technical	4.06	10.84	15.50	17.71	17.58	16.58	15.29	14.00	13.23	14.97	14.23	13.41
Sales Workers	11.64	8.74	9.21	9.57	10.37	10.40	10.54	10.01	9.91	10.16	9.96	9.91
Service Workers	7.50	6.63	6.28	5.99	5.72	5.30	5.55	5.81	5.94	6.03	6.07	6.24
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	64110	94413	97374	93351	96582	78582	67719	59217	58566	25758	735672	
Not Specified/Not Applicable (Excluded)	732	777	699	636	663	573	531	468	492	231	5802	
Age Structure	0.09	0.13	0.13	0.13	0.13	0.11	0.09	0.08	0.08	0.04	1.00	
MAORI ETHNIC GROUP												
Administrative Managerial	0.10	0.39	1.13	2.35	2.81	2.56	2.79	2.50	1.69	2.51	1.54	1.83
Agricultural/Forestry Workers Fishermen	16.39	12.98	12.43	12.71	10.99	11.91	12.42	12.83	12.80	19.55	13.05	12.95
Clerical	5.27	5.51	4.33	4.09	5.24	5.11	6.05	6.32	6.49	5.87	5.16	5.28
Production Transport Equipment Operatc	62.69	67.13	66.17	64.71	64.87	64.88	63.72	63.14	65.78	55.87	64.94	64.63
Professional Technical	2.41	3.90	5.60	6.31	6.21	6.37	6.75	6.51	5.42	6.15	5.18	5.54
Sales Workers	5.50	3.12	3.32	3.53	3.56	3.29	2.93	3.07	2.40	2.51	3.55	3.38
Service Workers	7.65	6.96	7.02	6.29	6.33	5.89	5.34	5.63	5.42	7.54	6.58	6.39
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	11955	16713	14355	11214	9282	6927	6351	4794	3375	1074	86040	
Not Specified/Not Applicable (Excluded)	354	333	228	165	144	120	111	75	66	30	1626	
Age Structure	0.14	0.19	0.17	0.13	0.11	0.08	0.07	0.06	0.04	0.01	1.00	

(continued over)

APPENDIX F.7 (continued)

F.7.6: Occupational Category (Full-time plus Part-time, Employed Only, Workforce aged 15-64 years), By Ethnicity, Females, 1986

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Administrative Managerial	0.18	1.25	2.70	3.31	3.28	3.11	2.76	2.33	2.25	2.82	2.36	2.15
Agricultural/Forestry Workers Fishermen	4.33	4.68	7.28	9.77	9.47	8.87	8.77	8.65	8.42	11.37	7.74	7.25
Clerical	43.00	41.52	33.51	30.40	30.76	31.19	30.90	29.91	29.96	28.85	33.94	35.18
Production Transport Equipment Operato	12.70	10.50	7.87	8.11	9.02	9.55	10.03	10.62	10.76	7.95	9.75	9.90
Professional Technical	5.53	19.60	26.66	23.40	21.28	20.22	19.11	18.33	16.99	16.41	19.32	18.71
Sales Workers	17.83	10.25	9.54	10.89	12.00	13.01	13.33	14.11	14.30	13.92	12.51	12.58
Service Workers	16.42	12.21	12.45	14.13	14.19	14.04	15.10	16.06	17.32	18.69	14.38	14.23
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	56427	76698	62736	59742	70800	60453	50688	37635	27384	10002	512565	
Not Specified/Not Applicable (Excluded)	375	297	249	264	321	288	252	213	198	93	2550	
Age Structure	0.11	0.15	0.12	0.12	0.14	0.12	0.10	0.07	0.05	0.02	1.00	
MAORI ETHNIC GROUP												
Administrative Managerial	0.09	0.50	0.88	1.17	0.94	0.85	1.04	1.16	0.56	0.67	0.73	0.79
Agricultural/Forestry Workers Fishermen	7.49	7.19	7.27	8.21	7.29	7.02	6.35	6.83	7.08	8.72	7.30	7.26
Clerical	28.02	29.63	25.02	20.99	19.38	17.68	15.73	12.62	10.80	12.08	22.69	21.08
Production Transport Equipment Operato	32.90	30.31	28.14	27.43	28.08	28.75	26.22	23.55	25.51	23.49	28.82	28.21
Professional Technical	3.04	9.00	12.34	12.35	12.14	12.89	14.42	17.56	15.83	15.44	10.70	11.69
Sales Workers	11.37	6.10	5.80	6.26	5.74	4.60	5.24	4.84	5.77	3.36	6.65	6.19
Service Workers	17.09	17.26	20.54	23.59	26.43	28.21	30.99	33.44	34.45	36.24	23.09	24.77
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	9657	10134	8166	6945	6378	4956	4347	2853	1611	447	55494	
Not Specified/Not Applicable (Excluded)	222	144	99	108	105	72	75	39	45	9	918	
Age Structure	0.17	0.18	0.15	0.13	0.11	0.09	0.08	0.05	0.03	0.01	1.00	

(continued over)

APPENDIX F.7 (continued)

F.7.7: Occupational Category (Full-time plus Part-time, Employed Only, Workforce aged 15-64 years), By Ethnicity, Males, 1991

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Administrative Managerial	0.30	1.91	5.55	8.99	11.90	13.85	13.57	12.05	9.49	9.16	9.04	7.95
Agricultural/Forestry Workers Fishermen	14.18	10.89	12.09	12.38	12.61	12.25	12.51	13.45	14.85	23.47	12.97	12.61
Clerical	6.82	9.25	7.20	6.21	6.10	6.53	7.09	7.73	8.57	8.09	7.19	7.22
Production Transport Equipment Operatc	43.53	46.59	40.33	36.89	33.01	30.81	31.24	32.79	33.64	24.99	35.91	37.48
Professional Technical	3.59	12.79	16.25	18.42	19.73	19.59	18.42	16.88	15.74	17.10	16.52	15.83
Sales Workers	20.51	10.73	11.48	10.63	10.68	11.32	11.49	11.06	11.06	10.43	11.65	11.92
Service Workers	11.07	7.84	7.09	6.48	5.97	5.65	5.67	6.04	6.66	6.76	6.73	7.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	43149	72405	81951	89427	85620	87912	70626	57975	44619	22461	656145	
Not Specified/Not Applicable (Excluded)	918	855	885	960	912	882	828	678	657	567	8142	
Age Structure	0.07	0.11	0.12	0.14	0.13	0.13	0.11	0.09	0.07	0.03	1.00	
MAORI ETHNIC GROUP												
Administrative Managerial	0.24	0.86	2.51	3.13	4.20	5.19	4.95	4.18	3.34	3.15	2.97	3.33
Agricultural/Forestry Workers Fishermen	16.06	10.69	10.45	10.68	10.79	10.24	9.78	11.42	13.58	20.98	11.36	11.48
Clerical	5.03	8.24	6.63	5.57	5.75	6.23	5.31	6.45	6.90	5.94	6.30	6.23
Production Transport Equipment Operatc	49.78	56.28	56.58	56.15	56.02	55.45	56.94	54.75	53.51	46.50	55.27	55.14
Professional Technical	3.12	7.00	8.49	9.62	10.20	10.59	11.35	11.63	11.74	11.89	8.96	9.55
Sales Workers	12.79	5.41	5.30	4.69	5.08	5.41	4.35	4.47	3.34	2.80	5.68	5.31
Service Workers	12.98	11.52	10.05	10.16	7.96	6.89	7.31	7.09	7.59	8.74	9.45	8.96
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	6147	10155	10536	9858	8145	6882	4968	4230	2607	858	64386	
Not Specified/Not Applicable (Excluded)	309	309	267	261	213	165	153	153	135	45	2010	
Age Structure	0.10	0.16	0.16	0.15	0.13	0.11	0.08	0.07	0.04	0.01	1.00	

(continued over)

APPENDIX F.7 (continued)

F.7.8: Occupational Category (Full-time plus Part-time, Employed Only, Workforce aged 15-64 years), By Ethnicity, Females, 1991

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total	Standardised
EUROPEAN												
Administrative Managerial	0.27	1.60	3.71	4.33	4.22	4.19	3.90	3.25	2.75	3.09	3.32	3.16
Agricultural/Forestry Workers Fishermen	4.34	3.65	5.77	8.23	7.75	7.23	7.63	8.82	9.72	14.50	7.04	6.66
Clerical	34.22	41.71	34.59	29.44	30.21	31.73	31.73	30.41	29.41	26.61	32.69	33.22
Production Transport Equipment Operato	8.31	8.11	6.61	5.90	5.98	6.46	7.17	7.28	7.70	6.40	6.91	6.96
Professional Technical	4.47	18.31	25.95	28.04	27.52	24.91	22.90	21.79	21.33	20.16	22.60	22.01
Sales Workers	26.20	12.00	10.73	10.66	11.33	12.18	12.86	13.25	13.10	13.35	12.99	13.33
Service Workers	22.18	14.63	12.64	13.41	12.98	13.29	13.82	15.21	16.00	15.89	14.45	14.66
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	38613	62832	61665	61821	67428	74634	58323	43818	26115	10179	505428	
Not Specified/Not Applicable (Excluded)	822	720	840	945	996	945	780	687	540	393	7668	
Age Structure	0.08	0.12	0.12	0.12	0.13	0.15	0.12	0.09	0.05	0.02	1.00	
MAORI ETHNIC GROUP												
Administrative Managerial	0.51	1.01	2.19	2.27	2.55	2.45	2.64	2.56	1.61	2.82	1.96	2.08
Agricultural/Forestry Workers Fishermen	5.47	4.71	5.25	5.60	5.57	5.01	4.97	5.31	4.64	5.65	5.22	5.20
Clerical	29.00	37.90	31.65	26.55	23.92	22.09	19.14	15.55	13.57	11.86	26.52	24.99
Production Transport Equipment Operato	17.72	18.20	17.56	17.54	17.69	18.72	19.67	17.52	15.54	12.99	17.88	17.88
Professional Technical	3.93	12.73	16.68	19.73	20.52	20.62	20.42	23.62	28.93	31.64	17.42	18.65
Sales Workers	20.23	8.30	7.53	7.48	7.45	7.13	5.95	5.91	6.43	3.95	8.68	8.07
Service Workers	23.13	17.16	19.13	20.82	22.31	23.99	27.20	29.53	29.29	31.07	22.33	23.14
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number	5265	7449	6852	6858	6360	5514	3981	3048	1680	531	47538	
Not Specified/Not Applicable (Excluded)	297	210	189	240	201	198	150	123	84	42	1734	
Age Structure	0.11	0.16	0.14	0.14	0.13	0.12	0.08	0.06	0.04	0.01	1.00	

Notes: Standardisation = Maori standardised to age structure of European workforce, and vice-versa.

Source: Database A

APPENDIX F.8.1

Component Analysis of Occupational Distribution in White Collar Employment, Maori Ethnic Group and European Workforces (Full-time plus Part-time, Employed Only) Aged 15-64 Years, by Sex, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
CLERICAL WORKERS								
European	8.81	8.47	7.99	7.19	34.50	33.53	33.94	32.69
Maori	4.03	4.46	5.16	6.30	20.63	21.15	22.69	26.52
European (Standardised*)	8.45	8.25	7.95	7.22	35.75	34.49	35.18	33.22
Maori (Standardised*)	4.19	4.62	5.28	6.23	19.07	19.87	21.08	24.99
Component of observed difference (European minus Maori) due to:								
Underlying Differential	4.52	3.83	2.75	0.94	15.28	13.50	12.67	7.20
Age Structure	0.26	0.19	0.08	-0.05	-1.40	-1.12	-1.43	-1.03
Observed Differential	4.78	4.02	2.83	0.89	13.88	12.38	11.24	6.17
Effect of Age Structure^	5.86	4.98	2.81	-5.47	-9.18	-8.27	-11.27	-14.34
PROFESSIONAL AND TECHNICAL								
European	13.45	13.40	14.23	16.52	19.74	19.98	19.32	22.60
Maori	4.40	4.38	5.18	8.96	10.93	10.29	10.70	17.42
European (Standardised*)	13.35	12.84	13.41	15.83	20.54	20.29	18.71	22.01
Maori (Standardised*)	4.45	4.65	5.54	9.55	11.00	10.76	11.69	18.65
Component of observed difference (European minus Maori) due to:								
Underlying Differential	8.98	8.61	8.46	6.92	9.18	9.61	7.82	4.27
Age Structure	0.07	0.41	0.59	0.64	-0.37	0.08	0.80	0.91
Observed Differential	9.05	9.02	9.05	7.56	8.81	9.69	8.62	5.18
Effect of Age Structure^	0.82	4.78	6.99	9.29	-4.04	0.81	10.26	21.29
SALES WORKERS								
European	10.26	10.18	9.96	11.65	12.93	13.32	12.51	12.99
Maori	3.06	3.43	3.55	5.68	7.16	7.17	6.65	8.68
European (Standardised*)	9.84	9.94	9.91	11.92	12.34	13.07	12.58	13.33
Maori (Standardised*)	3.05	3.35	3.38	5.31	7.10	6.92	6.19	8.07
Component of observed difference (European minus Maori) due to:								
Underlying Differential	7.00	6.67	6.47	6.29	5.51	6.15	6.12	4.79
Age Structure	0.20	0.08	-0.05	-0.32	0.27	0.00	-0.27	-0.47
Observed Differential	7.20	6.76	6.42	5.97	5.77	6.15	5.86	4.32
Effect of Age Structure^	2.91	1.23	-0.84	-5.07	4.85	0.01	-4.33	-9.89
ADMINISTRATIVE / MANAGERIAL								
European	4.97	5.61	7.80	9.04	0.75	0.84	2.36	3.32
Maori	1.05	1.11	1.54	2.97	0.29	0.37	0.73	1.96
European (Standardised*)	4.12	4.63	6.47	7.95	0.66	0.76	2.15	3.16
Maori (Standardised*)	1.29	1.32	1.83	3.33	0.32	0.41	0.79	2.08
Component of observed difference (European minus Maori) due to:								
Underlying Differential	3.38	3.90	5.45	5.34	0.40	0.41	1.50	1.22
Age Structure	0.54	0.60	0.81	0.73	0.07	0.07	0.14	0.14
Observed Differential	3.92	4.49	6.26	6.07	0.46	0.47	1.63	1.36
Effect of Age Structure^	16.11	15.27	14.89	13.65	16.42	16.11	9.10	11.57

Notes: * Maori data standardised to age structure of European workforce, and vice versa.

^ Percentage of Observed Differential. Positive value denotes additive effect; Negative value denotes offsetting effect.

Occupation Not Specified excluded.

Source: Database A (see Appendix F.7)

APPENDIX F.8.2

Component Analysis of Occupational Distribution in Blue Collar Employment, Maori Ethnic Group and European Workforces (Full-time plus Part-time, Employed Only) Aged 15-64 Years, by Sex, 1976-1991

	MALES				FEMALES			
	1976	1981	1986	1991	1976	1981	1986	1991
PRODUCTION, TRANSPORT EQUIPMENT OPERATORS AND LABOURERS								
European	45.06	42.54	40.54	35.91	12.91	10.97	9.75	6.91
Maori	71.29	66.17	64.94	55.27	32.55	29.45	28.82	17.88
European (Standardised*)	47.09	44.28	42.73	37.48	12.41	10.81	9.90	6.96
Maori (Standardised*)	70.22	65.91	64.63	55.14	32.34	28.94	28.21	17.88
Component of observed difference (European minus Maori) due to:								
Underlying Differential	-24.68	-22.63	-23.15	-18.51	-19.78	-18.30	-18.69	-10.95
Age Structure	-1.56	-1.00	-1.25	-0.85	0.14	-0.17	-0.38	-0.02
Observed Differential	-26.24	-23.63	-24.40	-19.37	-19.64	-18.47	-19.07	-10.97
Effect of Age Structure^	6.30	4.43	5.40	4.61	-0.71	0.94	2.03	0.21
SERVICE WORKERS								
European	4.37	6.08	6.07	6.73	13.45	14.43	14.38	14.45
Maori	3.28	6.23	6.58	9.45	22.96	24.66	23.09	22.33
European (Standardised*)	4.22	6.20	6.24	7.00	12.79	13.92	14.23	14.66
Maori (Standardised*)	3.49	6.11	6.39	8.96	24.68	26.42	24.77	23.14
Component of observed difference (European minus Maori) due to:								
Underlying Differential	0.91	-0.03	-0.33	-2.34	-10.70	-11.37	-9.63	-8.18
Age Structure	0.18	-0.12	-0.18	-0.39	1.18	1.14	0.91	0.30
Observed Differential	1.09	-0.15	-0.51	-2.73	-9.52	-10.23	-8.71	-7.88
Effect of Age Structure^	19.35	385.89	55.04	16.46	-11.06	-10.01	-9.49	-3.64
AGRICULTURAL, FORESTRY, FISHING WORKERS AND HUNTERS								
European	13.08	13.72	13.40	12.97	5.72	6.92	7.74	7.04
Maori	12.88	14.22	13.05	11.36	5.48	6.92	7.30	5.22
European (Standardised*)	12.93	13.85	13.29	12.61	5.51	6.67	7.25	6.66
Maori (Standardised*)	13.32	14.04	12.95	11.48	5.50	6.68	7.26	5.20
Component of observed difference (European minus Maori) due to:								
Underlying Differential	-0.09	-0.34	0.34	1.37	0.12	0.00	0.21	1.64
Age Structure	0.29	-0.16	0.00	0.24	0.12	0.01	0.22	0.18
Observed Differential	0.20	-0.50	0.35	1.61	0.24	0.01	0.43	1.82
Effect of Age Structure^	-309.83	45.35	0.69	17.38	94.40	-722.06	104.84	11.00

Notes: * Maori data standardised to age structure of European workforce, and vice versa.
^ Percentage of Observed Differential. Positive value denotes additive effect; Negative value denotes offsetting effect.
Occupation Not Specified excluded.

Source: Database A (see Appendix F.7)

APPENDIX F.8.3

Index of Ethnic Dissimilarity for Occupational Structure, Maori and European Workforces, by Sex, 1976-1991

	1976	1981	1986	1991	1976	1981	1986	1991
Unstandardised (Crude)	26.24	24.28	24.91	22.09	29.16	28.70	27.79	18.85
Standardised*	25.40	23.72	24.41	21.46	30.66	29.96	28.85	19.66

Notes: * Maori data standardised to age structure of European workforce, and vice versa; Occupation Not Specified excluded.

Source: Database A (see Appendices F.8.1 and F.8.2)

APPENDIX G

APPENDIX G.1.1

Component Analysis of Ethnic Differentials for Highest Educational Qualification, Maori and European Populations Aged 15+ Years, by Sex, 1981-1991

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
SECONDARY SCHOOL QUALIFICATIONS ONLY						
European (observed)	25.93	26.10	26.67	27.87	31.29	33.63
Maori (observed)	18.68	19.97	21.34	21.48	24.18	25.79
European (standardised*)	32.71	31.02	30.63	36.39	37.59	37.43
Maori (standardised*)	14.58	16.91	17.94	16.14	19.69	21.65
Component of observed difference (European minus Maori) due to:						
Underlying Differential	12.69	10.11	9.01	13.32	12.50	11.81
Age Structure	-5.44	-3.99	-3.69	-6.93	-5.39	-3.97
Observed Differential	7.24	6.12	5.32	6.39	7.11	7.84
Effect of Age Structure^	-42.91	-39.45	-40.92	-52.00	-43.10	-33.58
OTHER TERTIARY QUALIFICATIONS						
European (observed)	21.69	31.93	36.33	17.09	22.92	28.32
Maori (observed)	8.84	17.67	23.47	6.51	11.76	19.60
European (standardised*)	20.92	29.87	34.91	17.80	23.51	29.79
Maori (standardised*)	8.86	17.99	23.21	6.21	11.34	17.80
Component of observed difference (European minus Maori) due to:						
Underlying Differential	12.45	13.07	12.28	11.09	11.67	10.36
Age Structure	0.40	1.19	0.59	-0.51	-0.50	-1.63
Observed Differential	12.85	14.26	12.86	10.58	11.17	8.73
Effect of Age Structure^	3.19	9.11	4.77	-4.57	-4.31	-15.76
BACHELORS / POST GRADUATE QUALIFICATIONS						
European (observed)	5.59	7.50	8.22	2.78	4.34	5.41
Maori (observed)	0.95	1.47	1.88	0.45	0.94	1.39
European (standardised*)	5.40	7.33	8.17	3.03	4.80	6.15
Maori (standardised*)	1.04	1.56	1.90	0.42	0.86	1.24
Component of observed difference (European minus Maori) due to:						
Underlying Differential	4.50	5.90	6.30	2.47	3.67	4.46
Age Structure	0.14	0.13	0.03	-0.14	-0.27	-0.44
Observed Differential	4.64	6.03	6.33	2.33	3.40	4.03
Effect of Age Structure^	3.11	2.23	0.48	-5.53	-7.35	-9.81
STILL AT SCHOOL / NO QUALIFICATIONS						
European (observed)	46.79	34.47	28.79	52.26	41.45	32.63
Maori (observed)	71.53	60.89	53.30	71.56	63.12	53.23
European (standardised*)	40.97	31.79	26.29	42.78	34.10	26.64
Maori (standardised*)	75.52	63.54	56.95	77.22	68.10	59.30
Component of observed difference (European minus Maori) due to:						
Underlying Differential	-29.64	-29.08	-27.59	-26.88	-27.84	-26.63
Age Structure	4.91	2.67	3.07	7.57	6.16	6.04
Observed Differential	-24.74	-26.42	-24.52	-19.31	-21.68	-20.60
Effect of Age Structure^	-16.56	-9.17	-11.13	-28.17	-22.13	-22.66
INDEX OF DISSIMILARITY**	28.73	29.07	28.16	24.97	26.66	26.68

Notes: *Data for Maori standardised to age structure of European population, and vice versa.
^Percentage of Underlying Differential. Positive value denotes additive effect;
**Data for Maori standardised to age structure of European population.
Negative value denotes offsetting effect.

Source: Database B (see Appendix G.1.2)

APPENDIX G.1.2

G.1.2.1: Highest Qualification: Percentage of Each Age Group with Highest Qualification (Population Aged 15+ Years), Males, by Ethnicity, 1981

	EUROPEAN					MAORI ETHNIC GROUP					POPULATION COMPOSITION	
	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	European	Maori
15-19	42.66	54.97	0.01	2.35	118482	70.46	28.53	0.00	1.01	23214	0.13	0.24
20-24	27.23	41.95	5.81	25.01	105297	62.08	26.69	0.86	10.37	17850	0.12	0.18
25-29	28.50	31.41	9.86	30.23	92208	63.54	20.32	1.65	14.49	13068	0.10	0.13
30-34	35.63	23.81	10.03	30.54	94800	68.98	14.54	1.50	14.98	10416	0.11	0.11
35-39	41.86	19.80	8.26	30.08	76674	74.96	10.90	1.68	12.46	7488	0.09	0.08
40-44	47.54	16.58	6.44	29.43	67050	77.54	9.81	1.43	11.23	6945	0.08	0.07
45-49	52.57	15.15	5.03	27.24	59763	80.15	8.69	0.97	10.19	5592	0.07	0.06
50-54	57.41	13.70	4.64	24.25	64122	85.02	6.38	0.94	7.66	4467	0.07	0.05
55-59	61.58	12.96	4.56	20.91	59799	85.98	6.16	0.95	6.91	3168	0.07	0.03
60-64	66.64	13.24	3.90	16.22	47982	87.60	4.90	1.50	5.99	2202	0.05	0.02
65-69	70.27	12.44	4.02	13.26	41373	90.81	3.96	0.36	4.86	1665	0.05	0.02
70-74	73.39	11.39	3.73	11.49	30294	90.56	5.01	0.88	3.54	1017	0.03	0.01
75+	78.57	8.81	3.16	9.46	30822	90.71	5.58	0.74	2.97	807	0.03	0.01
TOTAL	46.79	25.93	5.59	21.69	888666	71.53	18.68	0.95	8.84	97899	1.00	1.00
Crude Difference**	-24.74	7.24	4.64	12.85								
Standardised***	40.97	32.71	5.40	20.92	100.00	75.52	14.58	1.04	8.86	100.00		

G.1.2.2: Highest Qualification: Percentage of Each Age Group with Highest Qualification (Population Aged 15+ Years), Females, by Ethnicity, 1981

	EUROPEAN					MAORI ETHNIC GROUP					POPULATION COMPOSITION	
	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	European	Maori
15-19	35.39	58.91	0.03	5.68	113634	65.89	31.30	0.00	2.81	22737	0.13	0.23
20-24	25.12	46.73	4.73	23.42	100440	61.04	30.17	0.70	8.10	18486	0.11	0.19
25-29	31.06	37.68	6.06	25.19	92709	64.38	26.41	0.88	8.34	13314	0.10	0.14
30-34	43.17	28.51	4.77	23.55	93303	73.36	17.68	0.82	8.14	10281	0.10	0.10
35-39	50.26	23.74	3.67	22.33	74637	79.16	12.54	0.51	7.79	7629	0.08	0.08
40-44	55.35	20.16	2.71	21.78	65031	79.54	12.45	0.40	7.61	6819	0.07	0.07
45-49	60.61	16.91	2.14	20.34	56022	80.39	10.11	0.28	9.23	5430	0.06	0.06
50-54	66.21	14.35	2.12	17.32	58878	85.21	7.12	0.21	7.47	4380	0.07	0.04
55-59	70.69	13.49	1.63	14.20	57738	87.68	6.30	0.18	5.84	3288	0.06	0.03
60-64	75.14	12.20	1.22	11.44	51684	92.66	3.22	0.13	3.99	2331	0.06	0.02
65-69	78.10	10.74	1.30	9.86	45951	94.00	3.45	0.55	2.00	1650	0.05	0.02
70-74	79.61	9.96	1.33	9.09	36291	91.40	5.16	0.57	2.87	1047	0.04	0.01
75+	83.90	7.42	1.09	7.59	53271	92.90	4.32	0.00	2.78	972	0.06	0.01
TOTAL	52.26	27.87	2.78	17.09	899589	71.56	21.48	0.45	6.51	98364	1.00	1.00
Crude Difference**	-19.31	6.39	2.33	10.58								
Standardised***	42.78	36.39	3.03	17.80	100.00	77.22	16.14	0.42	6.21	100.00		

(continued over)

APPENDIX G.1.2 (continued)

G.1.2.3: Highest Qualification: Percentage of Each Age Group with Highest Qualification (Population Aged 15+ Years), Males, by Ethnicity, 1986

	EUROPEAN					MAORI ETHNIC GROUP					POPULATION COMPOSITION	
	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	European	Maori
15-19	40.38	54.97	0.10	4.55	114798	65.89	29.62	0.01	4.47	23196	0.12	0.20
20-24	23.61	38.73	7.07	30.59	108666	54.03	26.58	1.31	18.07	21015	0.11	0.19
25-29	23.67	26.38	11.25	38.69	103929	54.83	20.13	2.17	22.86	16692	0.11	0.15
30-34	23.65	24.37	12.15	39.82	97593	55.57	16.71	2.37	25.35	12675	0.10	0.11
35-39	29.70	18.65	12.05	39.60	99396	60.07	11.63	2.20	26.09	10083	0.10	0.09
40-44	34.81	15.84	9.99	39.35	80322	65.04	10.65	2.32	21.99	7491	0.08	0.07
45-49	37.73	14.66	7.95	39.66	69138	64.82	12.62	1.73	20.84	6753	0.07	0.06
50-54	40.23	15.48	6.27	38.03	61737	65.92	12.84	1.57	19.67	5352	0.06	0.05
55-59	41.90	16.30	5.83	35.97	65439	70.13	12.38	1.33	16.16	4047	0.07	0.04
60-64	41.98	19.19	5.59	33.24	58455	70.95	13.18	1.34	14.53	2685	0.06	0.02
65-69	44.91	21.23	4.91	28.95	44424	74.50	11.03	1.27	13.20	1659	0.05	0.01
70-74	47.70	22.73	4.88	24.68	35130	78.12	10.03	1.52	10.33	987	0.04	0.01
75+	52.03	22.11	4.35	21.50	39627	78.03	11.15	0.64	10.19	942	0.04	0.01
TOTAL	34.47	26.10	7.50	31.93	978654	60.89	19.97	1.47	17.67	113577	1.00	1.00
Crude Difference**	-26.42	6.12	6.03	14.26								
Standardised***	31.79	31.02	7.33	29.87	100.00	63.54	16.91	1.56	17.99	100.00		

APPENDIX G.1.2 (continued)

G.1.2.4: Highest Qualification: Percentage of Each Age Group with Highest Qualification (Population Aged 15+ Years), Females, by Ethnicity, 1986

	EUROPEAN					MAORI ETHNIC GROUP					POPULATION COMPOSITION	
	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	European	Maori
15-19	32.68	58.95	0.13	8.24	110004	60.70	32.94	0.13	6.23	23079	0.11	0.20
20-24	20.02	47.29	6.31	26.38	105222	54.26	31.22	1.20	13.32	21531	0.11	0.19
25-29	23.79	37.08	8.12	31.01	103854	57.93	27.49	1.51	13.07	17907	0.10	0.15
30-34	28.37	32.84	7.91	30.88	98985	60.98	24.10	1.37	13.55	13107	0.10	0.11
35-39	39.44	24.48	6.30	29.77	98547	67.87	16.31	1.09	14.72	10188	0.10	0.09
40-44	45.14	21.70	5.09	28.07	78300	71.18	13.55	1.32	13.95	7506	0.08	0.06
45-49	49.24	20.39	3.95	26.42	67428	69.38	15.18	0.94	14.50	6681	0.07	0.06
50-54	52.78	19.83	3.11	24.28	58671	71.16	13.70	0.69	14.45	5190	0.06	0.04
55-59	55.30	20.65	2.74	21.31	60645	73.87	13.33	0.53	12.27	3984	0.06	0.03
60-64	55.83	23.48	2.14	18.55	58545	79.58	11.59	0.44	8.39	2718	0.06	0.02
65-69	58.87	23.53	1.78	15.82	50055	83.30	10.73	0.34	5.62	1761	0.05	0.02
70-74	61.32	23.27	1.86	13.54	42600	85.21	8.27	0.50	6.02	1197	0.04	0.01
75+	66.95	18.71	1.51	12.83	65193	83.98	9.71	0.24	6.07	1236	0.07	0.01
TOTAL	41.45	31.29	4.34	22.92	998049	63.12	24.18	0.94	11.76	116085	1.00	1.00
Crude Difference**	-21.68	7.11	3.40	11.17								
Standardised***	34.10	37.59	4.80	23.51	100.00	68.10	19.69	0.86	11.34	100.00		

(continued over)

G.1.2.5: Highest Qualification: Percentage of Each Age Group with Highest Qualification (Population Aged 15+ Years), Males, by Ethnicity, 1991

	EUROPEAN					MAORI ETHNIC GROUP					POPULATION COMPOSITION	
	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	European	Maori
15-19	28.86	59.81	0.20	11.12	104193	50.37	38.16	0.30	11.17	23256	0.10	0.19
20-24	20.05	35.99	8.24	35.72	100929	46.11	26.90	1.85	25.14	20073	0.10	0.16
25-29	21.73	26.08	10.96	41.23	98943	49.11	21.08	2.61	27.20	18144	0.10	0.14
30-34	21.43	22.48	12.25	43.84	103371	51.42	17.29	2.43	28.86	15561	0.10	0.12
35-39	22.04	21.69	12.84	43.44	96879	51.86	14.74	2.76	30.64	12072	0.10	0.10
40-44	27.93	17.48	12.35	42.24	97761	56.50	11.06	2.50	29.94	9711	0.10	0.08
45-49	32.88	15.62	9.88	41.62	78612	62.05	9.90	2.53	25.52	7242	0.08	0.06
50-54	35.98	14.79	7.62	41.61	66804	62.27	11.81	1.99	23.94	6480	0.07	0.05
55-59	38.36	15.64	5.87	40.13	59205	65.50	12.28	1.47	20.75	4887	0.06	0.04
60-64	39.68	17.55	5.47	37.30	61665	69.08	11.67	1.70	17.55	3522	0.06	0.03
65-69	35.53	24.56	5.34	34.56	53406	67.11	13.69	1.34	17.85	2235	0.05	0.02
70-74	33.24	32.21	4.58	29.96	38697	68.56	15.35	0.74	15.35	1212	0.04	0.01
75+	38.61	31.65	4.37	25.37	50238	70.14	14.25	1.10	14.52	1095	0.05	0.01
TOTAL	28.79	26.67	8.22	36.33	1010703	53.30	21.34	1.88	23.47	125490	1.00	1.00
Crude Difference**	-24.52	5.32	6.33	12.86								
Standardised***	26.29	30.63	8.17	34.91	100.00	56.95	17.94	1.90	23.21	100.00		

G.1.2.6: Highest Qualification: Percentage of Each Age Group with Highest Qualification (Population Aged 15+ Years), Females, by Ethnicity, 1991

	EUROPEAN					MAORI ETHNIC GROUP					POPULATION COMPOSITION	
	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	Still at School/ No Quals.	Secondary School Quals.	Bachelor's /Post-Graduate	Other Tertiary Quals.	TOTAL* (Number)	European	Maori
15-19	22.88	62.64	0.21	14.28	99900	42.84	42.97	0.20	13.99	23433	0.09	0.18
20-24	16.23	42.12	8.14	33.51	97974	44.14	30.00	1.74	24.13	21411	0.09	0.16
25-29	18.67	37.05	9.42	34.87	102231	49.54	25.97	1.84	22.65	20214	0.10	0.15
30-34	21.20	32.65	9.22	36.94	105753	53.10	23.85	1.86	21.19	17271	0.10	0.13
35-39	25.30	29.14	8.88	36.68	98832	54.69	21.37	1.99	21.95	12831	0.09	0.10
40-44	35.11	22.74	7.11	35.05	97539	61.23	16.23	1.76	20.78	10035	0.09	0.08
45-49	40.50	21.36	5.58	32.56	77256	65.84	13.47	1.91	18.78	7395	0.07	0.06
50-54	44.83	21.14	4.26	29.77	66105	64.22	15.20	1.53	19.05	6456	0.06	0.05
55-59	47.75	22.24	3.14	26.86	57210	66.95	15.01	0.61	17.44	4938	0.05	0.04
60-64	48.49	25.70	2.63	23.18	59436	72.09	13.67	0.41	13.83	3666	0.06	0.03
65-69	42.27	35.74	2.03	19.96	57618	73.27	16.19	0.13	10.41	2391	0.05	0.02
70-74	40.30	41.18	1.62	16.91	48609	76.26	15.76	0.00	7.98	1428	0.05	0.01
75+	51.11	32.90	1.49	14.49	84093	75.90	15.14	0.60	8.37	1506	0.08	0.01
TOTAL	32.63	33.63	5.41	28.32	1052556	53.23	25.79	1.39	19.60	132975	1.00	1.00
Crude Difference**	-20.60	7.84	4.03	8.73								
Standardised***	26.64	37.43	6.15	29.79	100.00	59.30	21.65	1.24	17.80	100.00		

Notes: * Excludes Qualifications Not Specified.

**Percentage European minus percentage Maori

*** Maori standardised to European age structure, and vice versa.

APPENDIX G.1.3

Highest Qualification: Percentage of Age Group Not Specifying a Qualification (Population Aged 15+ Years), by Sex and Ethnicity, 1981-1991

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
EUROPEAN						
15-19	4.15	2.31	2.63	3.23	1.84	2.30
20-24	3.97	1.54	1.27	3.62	1.26	1.01
25-29	4.15	1.59	1.23	4.76	1.43	1.05
30-34	5.38	1.76	1.14	7.04	2.10	1.07
35-39	6.78	2.21	1.28	8.71	3.25	1.41
40-44	7.83	2.71	1.51	9.67	4.12	2.12
45-49	8.78	3.28	1.79	11.08	4.82	2.74
50-54	10.16	3.66	2.17	12.45	5.42	3.36
55-59	11.30	4.63	2.56	13.81	7.56	4.09
60-64	13.56	7.10	3.57	15.90	10.73	5.91
65-69	14.60	9.61	4.42	17.41	13.79	6.48
70-74	16.03	11.66	5.14	18.71	15.24	7.37
75+	18.62	14.28	6.94	19.02	17.34	9.08
TOTAL	8.09	3.99	2.35	9.85	5.83	3.31
NUMBER	78192	40635	24369	98271	61833	36012
MAORI ETHNIC GROUP						
15-19	8.31	6.53	6.86	8.02	6.00	5.81
20-24	8.16	4.29	3.31	8.49	4.01	2.91
25-29	9.40	4.25	3.15	10.63	4.25	2.91
30-34	10.86	4.71	3.23	13.53	6.08	3.58
35-39	12.91	5.62	3.69	16.10	7.94	4.25
40-44	14.16	6.93	3.92	16.03	10.48	5.48
45-49	14.96	8.64	4.43	16.28	11.42	6.49
50-54	15.78	9.40	5.80	18.07	12.23	7.32
55-59	16.78	11.71	6.59	16.65	15.47	8.66
60-64	16.69	12.94	7.12	17.43	16.34	9.82
65-69	15.53	14.13	8.48	17.79	16.86	10.55
70-74	17.32	17.96	9.62	17.69	18.90	11.03
75+	19.46	19.90	11.84	16.49	20.00	11.93
TOTAL	11.07	6.53	4.71	12.15	7.61	5.03
NUMBER	12186	7941	6201	13602	9564	7041

APPENDIX G.2.1

Percentage Point Gap Between European and Maori in Highest Qualification at Each Age, by Cohort and Sex, 1981-1991

SECONDARY SCHOOL QUALIFICATIONS ONLY

Cohort Born:	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
MALES										
1967-71	25.35	9.08								
1962-66	26.44	12.15	5.00							
1957-61		15.26	6.25	5.19						
1952-56			11.10	7.66	6.95					
1947-51				9.26	7.01	6.42				
1942-46					8.90	5.19	5.72			
1937-41						6.78	2.04	2.99		
1932-36							6.46	2.64	3.36	
1927-31								7.32	3.92	5.88
FEMALES										
1967-71	26.01	12.13								
1962-66	27.61	16.07	11.07							
1957-61		16.56	9.59	8.80						
1952-56			11.27	8.74	7.77					
1947-51				10.83	8.17	6.50				
1942-46					11.20	8.16	7.89			
1937-41						7.70	5.21	5.94		
1932-36							6.80	6.13	7.24	
1927-31								7.23	7.32	12.03

OTHER TERTIARY QUALIFICATIONS

Cohort Born:	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
MALES										
1967-71	0.08	10.58								
1962-66	1.35	12.52	14.03							
1957-61		14.64	15.83	14.98						
1952-56			15.74	14.47	12.80					
1947-51				15.56	13.51	12.31				
1942-46					17.62	17.37	16.10			
1937-41						18.20	18.83	17.67		
1932-36							17.04	18.35	19.38	
1927-31								16.60	19.81	19.75
FEMALES										
1967-71	2.01	9.38								
1962-66	2.87	13.06	12.22							
1957-61		15.32	17.94	15.74						
1952-56			16.85	17.33	14.73					
1947-51				15.40	15.05	14.27				
1942-46					14.55	14.12	13.78			
1937-41						14.17	11.92	10.72		
1932-36							11.12	9.83	9.43	
1927-31								9.85	9.04	9.35

(continued over)

APPENDIX G.2.1 (continued)

Percentage Point Gap Between European and Maori in Highest Qualification at Each Age, by Cohort and Sex, 1981-1991

BACHELORS/POST-GRADUATE QUALIFICATIONS

Cohort Born:	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
MALES										
1967-71	0.09	6.38								
1962-66	0.01	5.75	8.35							
1957-61		4.95	9.08	9.82						
1952-56			8.21	9.79	10.08					
1947-51				8.53	9.85	9.84				
1942-46					6.57	7.67	7.35			
1937-41						5.02	6.22	5.63		
1932-36							4.07	4.70	4.39	
1927-31								3.70	4.49	3.76
FEMALES										
1967-71	0.00	6.40								
1962-66	0.03	5.11	7.58							
1957-61		4.03	6.62	7.36						
1952-56			5.19	6.54	6.89					
1947-51				3.95	5.22	5.34				
1942-46					3.16	3.77	3.67			
1937-41						2.31	3.01	2.72		
1932-36							1.87	2.42	2.53	
1927-31								1.91	2.21	2.22

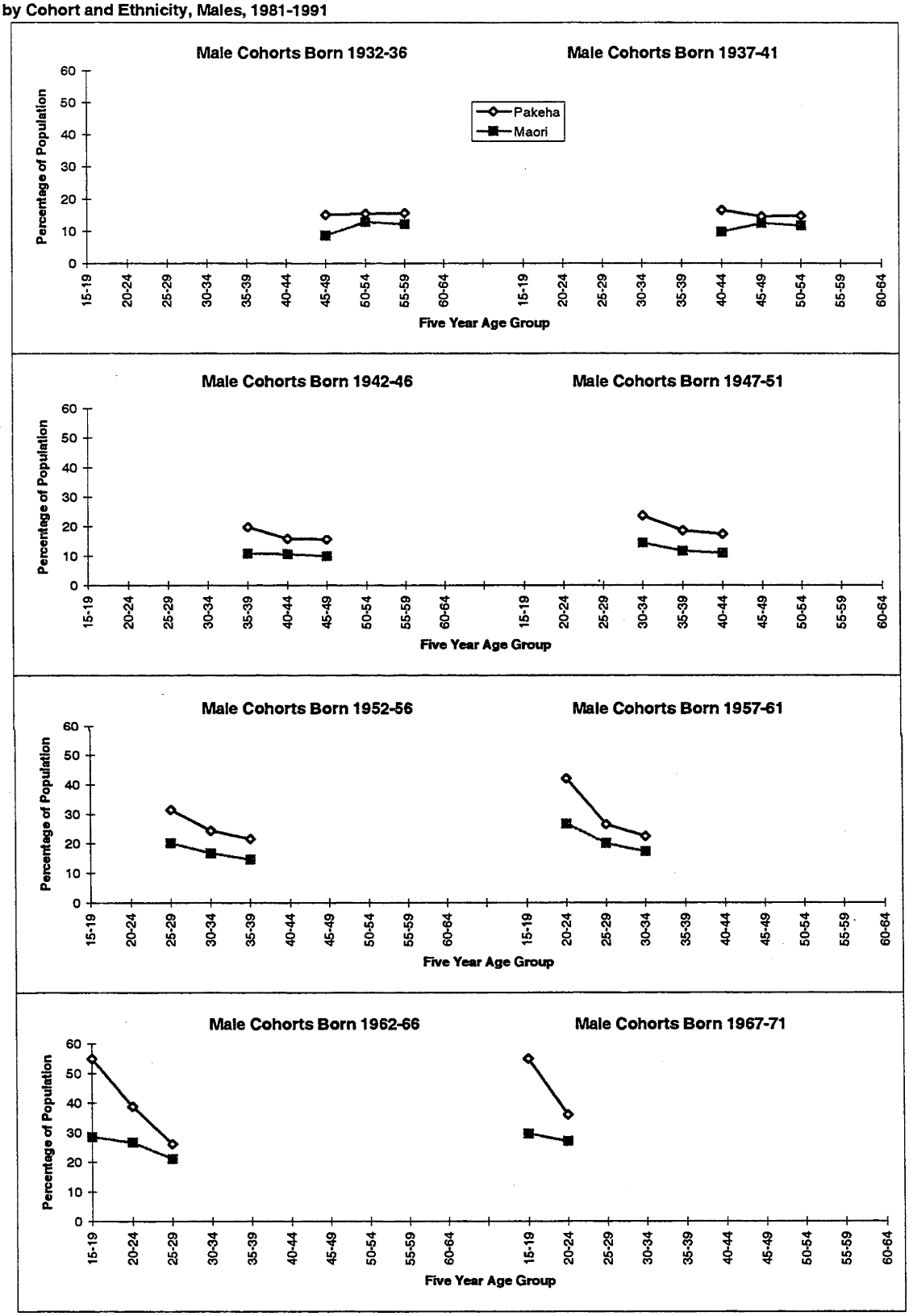
STILL AT SCHOOL/NO QUALIFICATIONS

Cohort Born:	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
MALES										
1967-71	-25.52	-26.05								
1962-66	-27.80	-30.43	-27.37							
1957-61		-34.85	-31.16	-29.99						
1952-56			-35.04	-31.92	-29.82					
1947-51				-33.35	-30.38	-28.57				
1942-46					-33.10	-30.23	-29.17			
1937-41						-29.99	-27.09	-26.29		
1932-36							-27.58	-25.69	-27.14	
1927-31								-27.62	-28.23	-29.40
FEMALES										
1967-71	-28.02	-27.91								
1962-66	-30.50	-34.23	-30.87							
1957-61		-35.92	-34.14	-31.90						
1952-56			-33.31	-32.61	-29.39					
1947-51				-30.19	-28.43	-26.12				
1942-46					-28.90	-26.05	-25.34			
1937-41						-24.19	-20.14	-19.39		
1932-36							-19.78	-18.38	-19.20	
1927-31								-18.99	-18.57	-23.60

Source: Database B (see Appendix G.1.2)

APPENDIX G.2.2

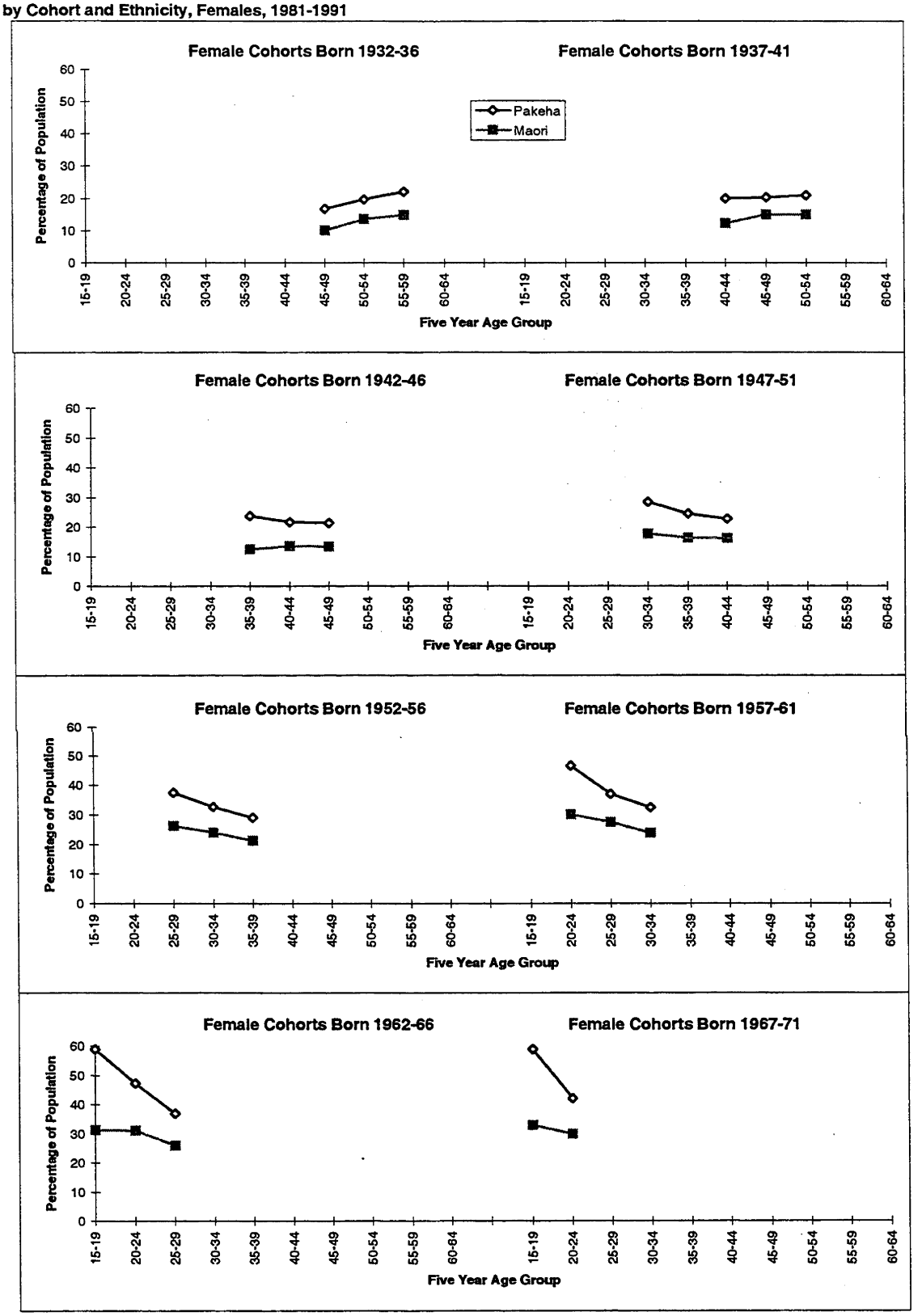
G.2.2.1: Percentage of Population at Each Age with Secondary School Qualifications as Highest Qualification, by Cohort and Ethnicity, Males, 1981-1991



(continued over)

APPENDIX G.2.2 (continued)

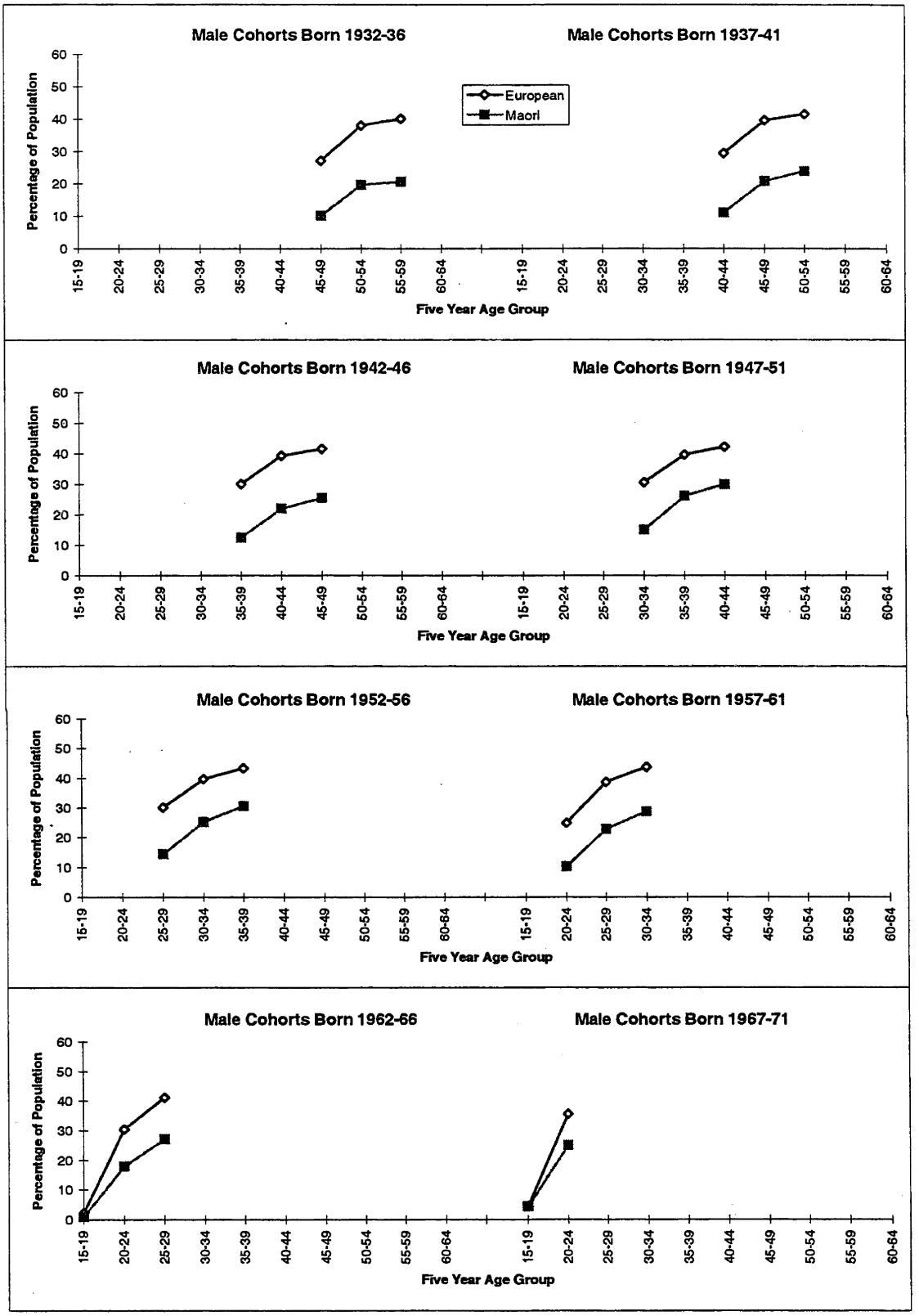
G.2.2.2: Percentage of Population at Each Age with Secondary School Qualifications as Highest Qualification, by Cohort and Ethnicity, Females, 1981-1991



(continued over)

APPENDIX G.2.2 (continued) Source: Database B (see Appendix G.1.2)

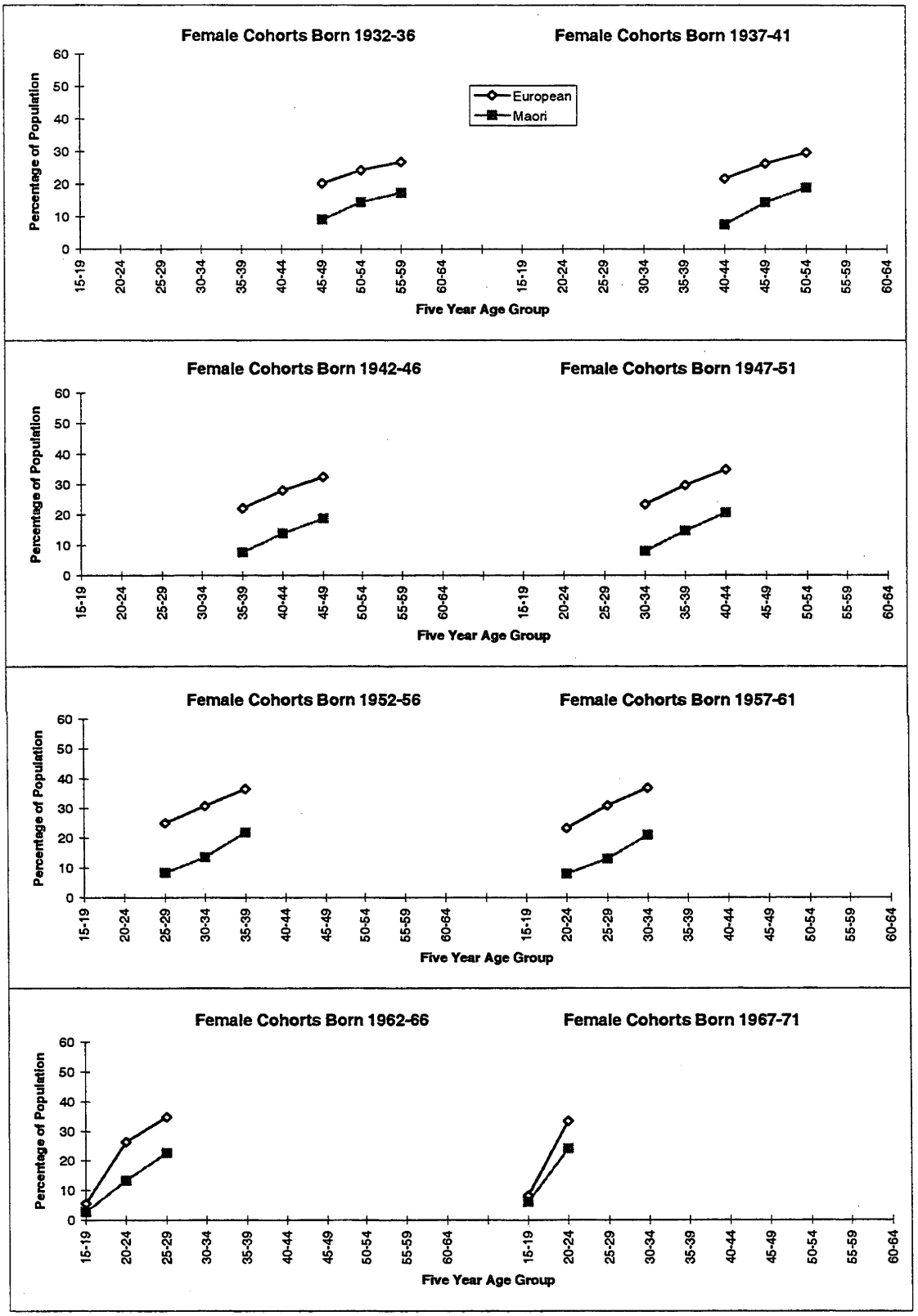
G.2.2.3: Percentage of Population at Each Age with Other Tertiary Qualifications as Highest Qualification, by Cohort and Ethnicity, Males, 1981-1991



(continued over)

APPENDIX G.2.2 (continued)

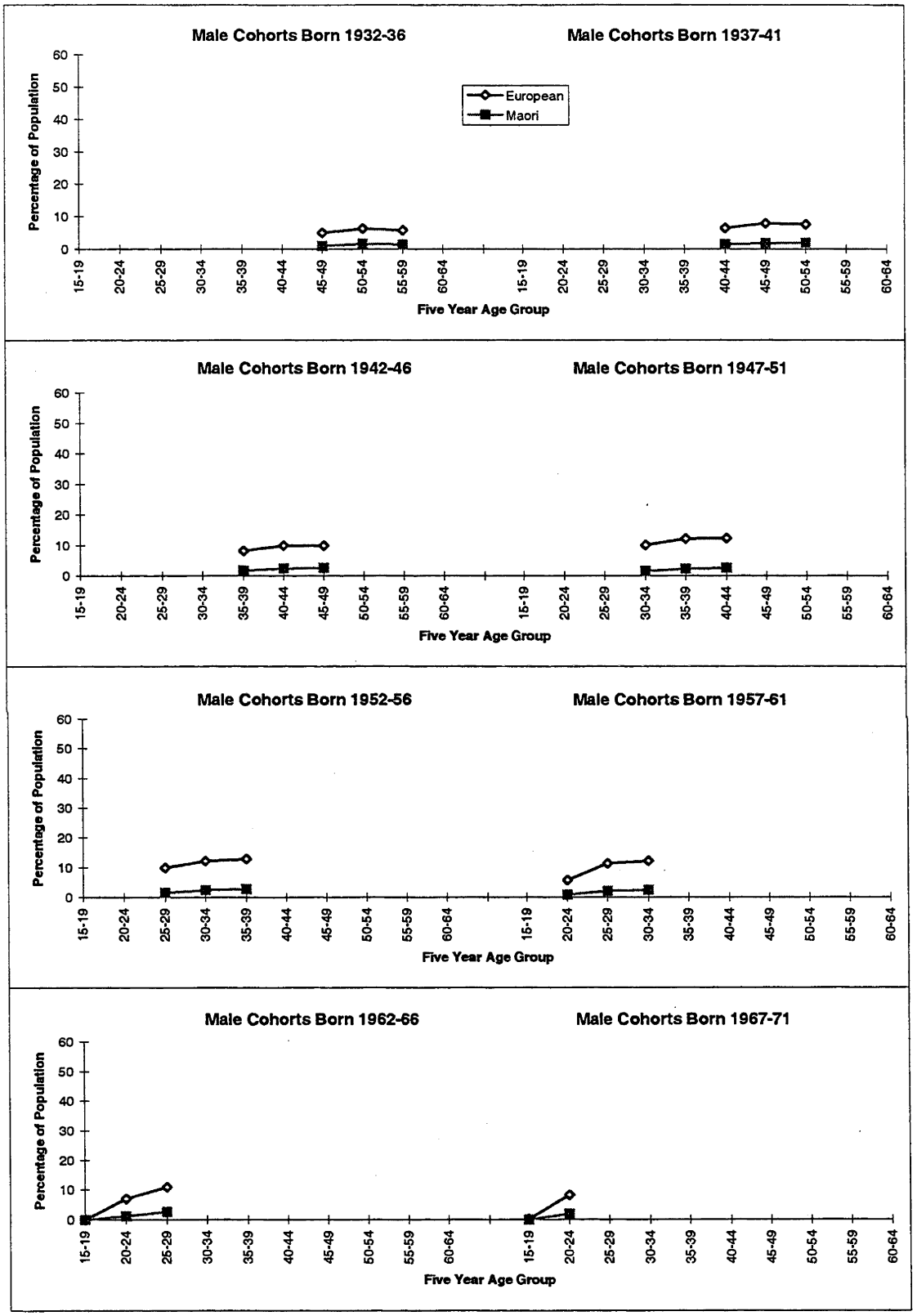
G.2.2.4: Percentage of Population at Each Age with Other Tertiary Qualifications as Highest Qualification, by Cohort and Ethnicity, Females, 1981-1991



(continued over)

APPENDIX G.2.2 (continued)

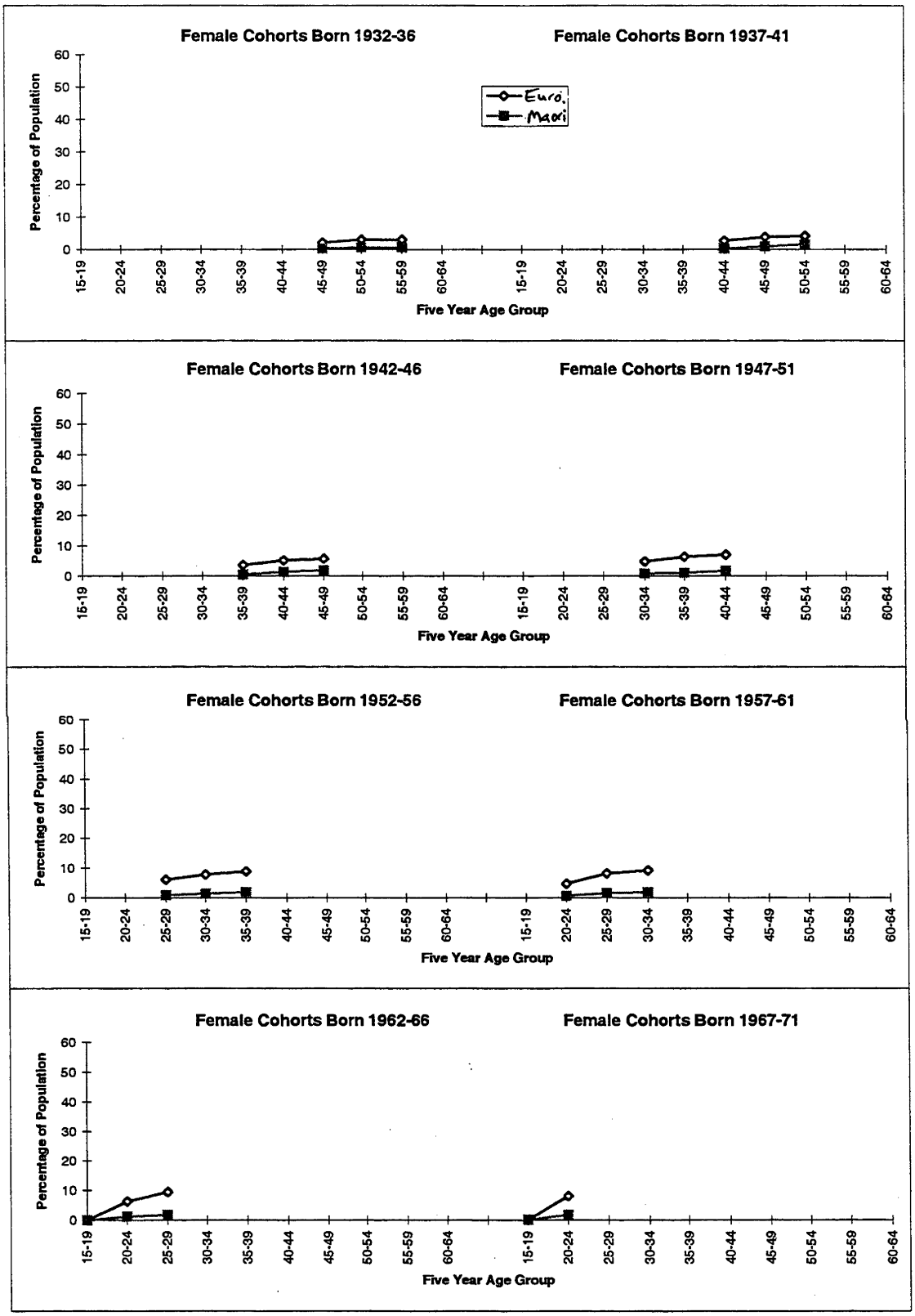
G.2.2.5: Percentage of Population at Each Age with Bachelors/Post-Graduate Qualifications as Highest Qualification, by Cohort and Ethnicity, Males, 1981-1991



(continued over)

APPENDIX G.2.2 (continued)

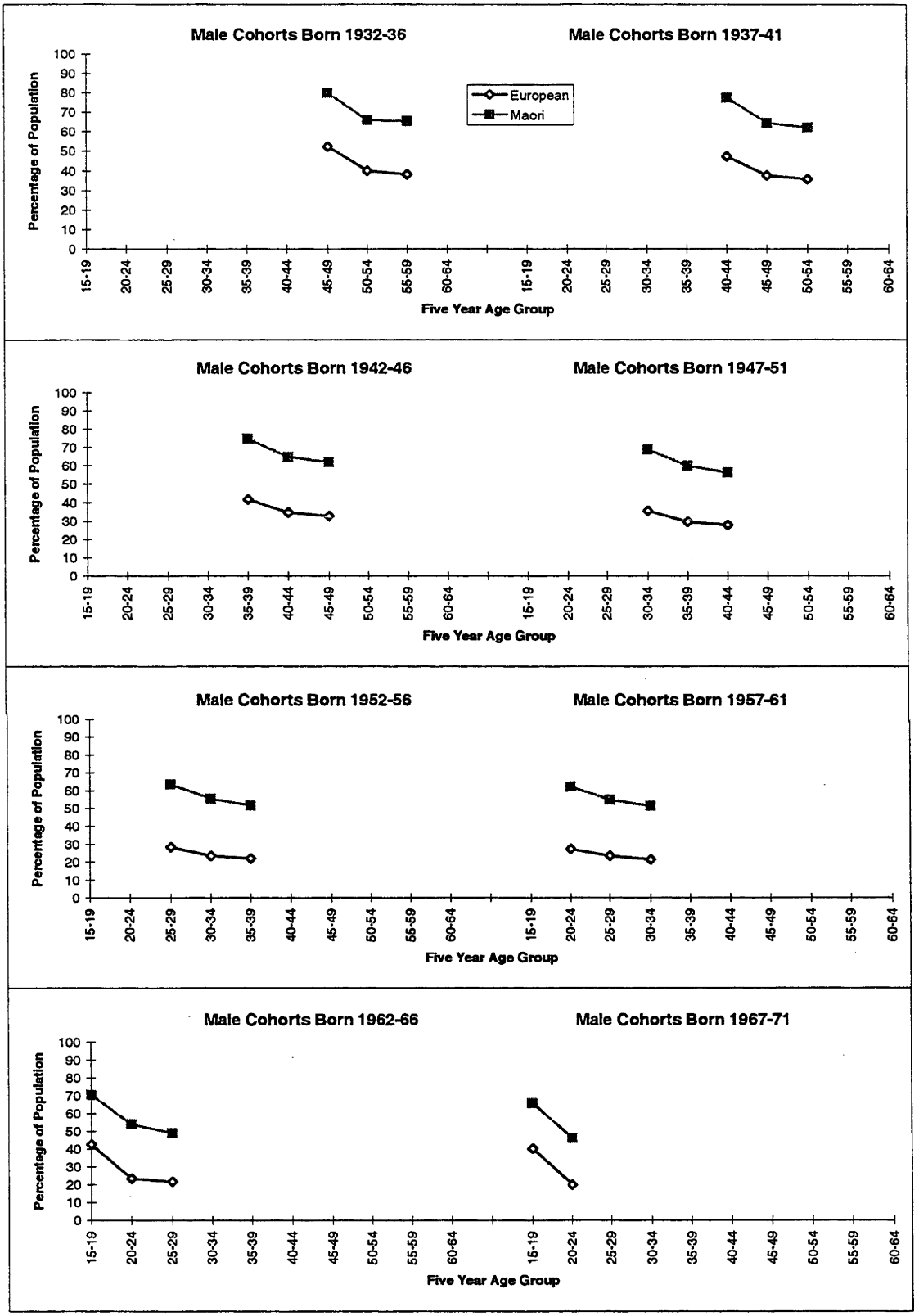
G.2.2.6: Percentage of Population at Each Age with Bachelors/Post-Graduate Qualifications as Highest Qualification, by Cohort and Ethnicity, Females, 1981-1991



(continued over)

APPENDIX G.2.2 (continued)

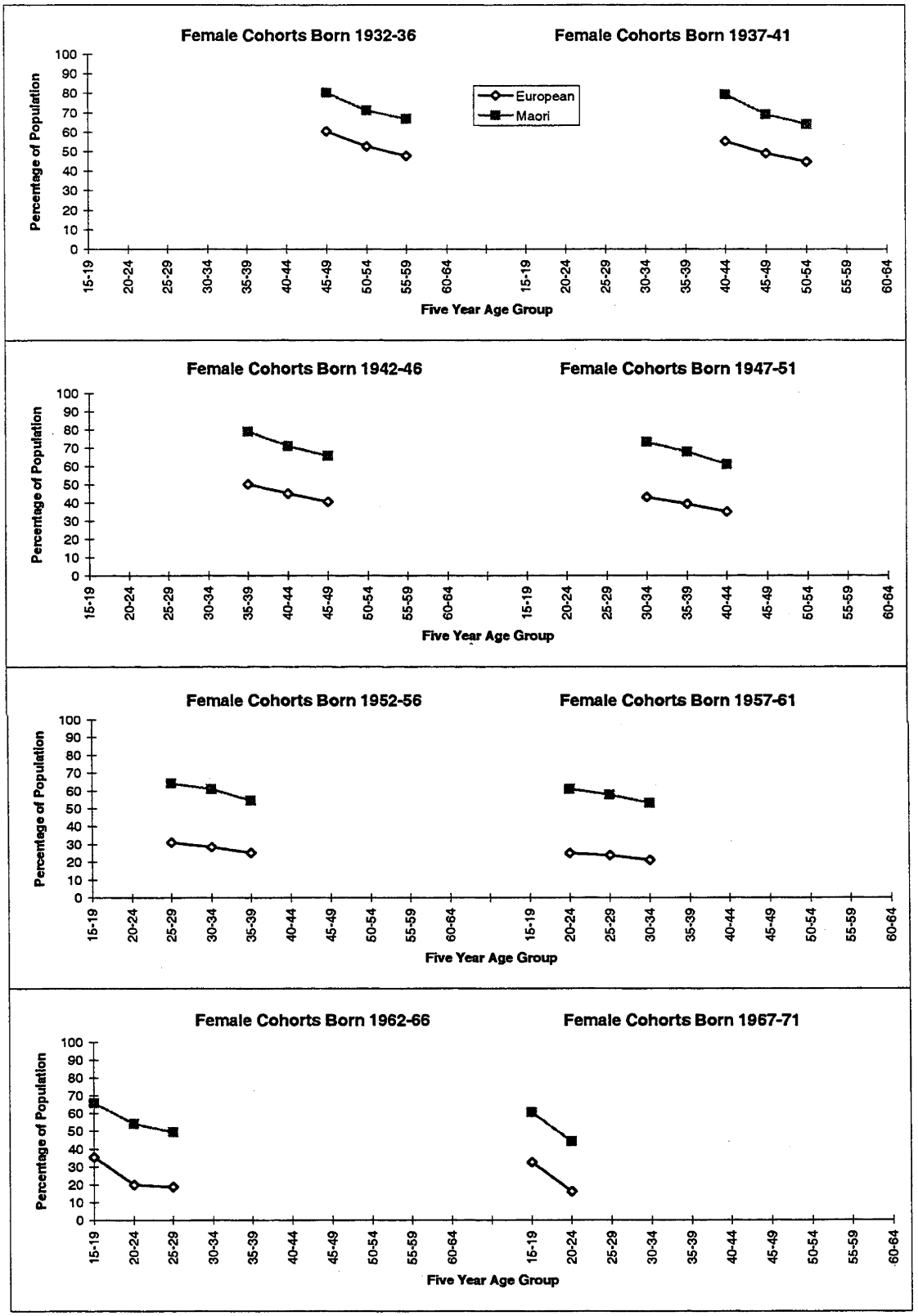
G.2.2.7: Percentage of Population at Each Age Still at School/No Qualifications as Highest Qualification, by Cohort and Ethnicity, Males, 1981-1991



(continued over)

APPENDIX G.2.2 (continued)

G.2.2.8: Percentage of Population at Each Age Still at School/No Qualifications as Highest Qualification, by Cohort and Ethnicity, Females, 1981-1991



Source: Appendix G.1.2

APPENDIX G.3.1

Highest Qualification by Labour Force Status and Sex (Percentage in Each Category), Population Aged 15-64 Years, Maori and European, 1981-1991

STILL AT SCHOOL/NO QUALIFICATIONS

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
EUROPEAN						
Full-Time	79.66	74.29	61.57	28.02	32.44	29.28
Part-Time	2.54	4.55	5.11	17.01	17.33	17.34
Unemployed	3.28	4.66	8.44	1.97	5.04	5.00
Not in the Labour Force	14.52	16.51	24.88	52.99	45.19	48.37
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
Number	340278	280044	239700	360621	314409	256566
MAORI ETHNIC GROUP						
Full-Time	73.87	64.64	40.85	27.79	30.48	19.70
Part-Time	1.63	6.49	4.38	8.92	9.94	8.31
Unemployed	11.58	12.38	17.92	7.53	12.03	11.32
Not in the Labour Force	12.92	16.49	36.85	55.76	47.55	60.67
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
Number	66858	66414	63792	66981	69750	66798
INDEX OF DISSIMILARITY*	8.30	9.67	21.45	8.32	9.35	18.61

SECONDARY SCHOOL QUALIFICATIONS ONLY

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
EUROPEAN						
Full-Time	77.78	74.76	62.35	43.34	44.52	37.76
Part-Time	3.66	4.48	7.03	15.67	15.70	18.57
Unemployed	2.48	5.10	7.91	2.35	6.05	6.40
Not in the Labour Force	16.09	15.66	22.71	38.64	33.73	37.27
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
Number	219090	229236	228024	238251	278403	285693
MAORI ETHNIC GROUP						
Full-Time	76.07	70.60	48.65	43.06	43.32	30.49
Part-Time	2.83	5.89	6.10	10.58	11.16	11.72
Unemployed	5.66	9.22	15.34	5.71	11.39	12.77
Not in the Labour Force	15.44	14.29	29.92	40.65	34.13	45.01
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
Number	18129	22299	26136	20976	27657	33450
INDEX OF DISSIMILARITY*	3.18	5.53	14.64	5.36	5.73	14.11

OTHER TERTIARY QUALIFICATIONS

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
EUROPEAN						
Full-Time	94.02	89.30	79.74	46.77	51.14	48.84
Part-Time	1.46	2.72	3.85	21.12	19.83	20.42
Unemployed	1.24	1.65	5.66	1.49	3.54	5.72
Not in the Labour Force	3.28	6.33	10.75	30.62	25.49	25.01
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
Number	180861	282387	324396	141831	206742	266223
MAORI ETHNIC GROUP						
Full-Time	94.26	85.88	63.37	55.44	57.16	41.37
Part-Time	1.27	4.15	4.25	14.84	12.82	11.81
Unemployed	2.36	4.93	15.79	3.71	8.03	14.72
Not in the Labour Force	2.11	5.04	16.58	26.01	21.98	32.10
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
Number	8514	19647	28707	6309	13404	25572
INDEX OF DISSIMILARITY*	1.36	4.71	16.37	10.89	10.52	16.09

BACHELORS/POST-GRADUATE QUALIFICATIONS

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
EUROPEAN						
Full-Time	89.45	89.34	83.98	52.91	58.72	58.40
Part-Time	3.34	3.04	4.12	18.52	17.37	17.72
Unemployed	1.57	2.02	4.26	2.77	3.90	5.02
Not in the Labour Force	5.63	5.59	7.65	25.80	20.01	18.86
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
Number	45948	67806	76242	23373	40647	53754
MAORI ETHNIC GROUP						
Full-Time	85.48	85.08	73.67	59.44	66.94	59.34
Part-Time	5.61	4.24	5.06	16.08	10.56	11.15
Unemployed	1.32	3.68	8.43	4.90	8.06	7.70
Not in the Labour Force	7.59	7.00	12.84	19.58	14.44	21.80
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00
Number	909	1629	2313	429	1080	1830
INDEX OF DISSIMILARITY*	4.22	4.26	10.31	8.66	12.38	6.57

Notes: Excludes Qualifications Not Specified
*Percentage European minus percentage Maori.

Source: Database B

APPENDIX G.3.2

Index of Ethnic Dissimilarity for Highest Qualification by Labour Force Status, Maori Ethnic Group and European Populations Aged 15-64 Years, by Sex, 1981-1991

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
Unstandardised	27.93	28.65	28.51	25.78	26.10	25.79
Standardised	30.39	29.47	29.60	28.35	27.85	27.32

Notes: Data for Maori standardised to age structure of European population, by sex.

Source: Database B (see Appendix G.3.3)

APPENDIX G.3.3

G.3.3.1: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, European Females, 1981

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	9.67	10.40	7.61	10.95	16.70	21.45	22.51	20.17	14.95	5.44	13.23	12.38
No Qualifications	Part-time	2.65	1.82	4.98	10.63	13.59	14.07	13.46	12.67	9.03	4.75	8.03	6.74
	UEP	2.88	1.21	0.53	0.45	0.46	0.57	0.72	0.60	0.41	0.03	0.93	1.21
	NILF	20.19	11.68	17.95	21.14	19.50	19.26	23.92	32.77	46.31	64.91	25.01	21.00
Secondary School	Full-time	27.62	29.91	13.49	8.10	8.21	8.30	7.16	5.33	3.96	1.56	13.51	17.34
	Part-time	6.01	3.17	5.84	7.31	7.09	5.72	4.44	3.08	2.14	1.07	4.89	5.16
	UEP	2.51	1.50	0.56	0.24	0.19	0.20	0.18	0.13	0.08	0.02	0.73	1.05
	NILF	22.77	12.15	17.79	12.87	8.26	5.94	5.12	5.80	7.32	9.54	12.05	13.88
Bachelor's/	Full-time	0.01	3.32	3.65	1.86	1.56	1.37	1.22	1.09	0.70	0.24	1.62	1.74
Post Graduate	Part-time	0.01	0.37	0.79	1.12	1.06	0.80	0.48	0.47	0.35	0.22	0.57	0.52
	UEP	0.01	0.25	0.19	0.09	0.06	0.05	0.03	0.05	0.02	0.00	0.08	0.10
	NILF	0.01	0.79	1.43	1.70	1.00	0.50	0.41	0.51	0.56	0.77	0.79	0.74
Other Tertiary	Full-time	4.89	17.91	11.12	7.12	8.18	9.74	9.42	7.40	4.88	1.83	8.68	9.46
	Part-time	0.17	1.42	4.25	6.75	7.45	6.81	5.75	4.32	2.75	1.48	3.92	3.40
	UEP	0.30	0.65	0.40	0.22	0.21	0.20	0.22	0.17	0.06	0.01	0.28	0.33
	NILF	0.32	3.44	9.42	9.46	6.50	5.03	4.95	5.43	6.50	8.11	5.68	4.95
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		113634	100440	92709	93303	74637	65031	56022	58878	57738	51684	764076	
Qualifications Not Specified		3792	3777	4638	7062	7122	6960	6978	8376	9252	9768	67725	
Age Structure*		0.15	0.13	0.12	0.12	0.10	0.09	0.07	0.08	0.08	0.07	1.00	

(continued over)

APPENDIX G.3.3 (continued)

G.3.3.2: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, Maori Females, 1981

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	15.85	16.37	14.71	21.53	28.71	30.84	29.06	26.10	19.16	7.21	19.66	20.43
No Qualifications	Part-time	2.76	3.20	6.51	10.62	11.36	10.73	10.22	7.53	7.03	3.60	6.31	7.05
	UEP	13.93	5.24	2.46	1.84	1.69	1.54	1.44	0.89	1.19	0.00	5.33	3.84
	NILF	33.36	36.22	40.69	39.36	37.40	36.43	39.67	50.68	60.31	81.85	39.44	43.13
Secondary School	Full-time	13.15	15.04	9.06	6.65	5.86	6.20	5.14	2.88	2.65	0.39	9.54	7.77
	Part-time	2.36	2.09	3.47	3.44	2.32	2.11	1.55	1.10	0.64	0.26	2.34	2.14
	UEP	3.47	1.53	0.47	0.20	0.31	0.18	0.06	0.07	0.00	0.00	1.26	0.85
	NILF	12.31	11.51	13.41	7.38	4.05	3.96	3.37	3.08	3.01	2.57	9.00	7.49
Bachelor's/	Full-time	0.00	0.42	0.43	0.53	0.39	0.22	0.22	0.14	0.09	0.00	0.27	0.26
Post Graduate	Part-time	0.00	0.08	0.16	0.15	0.08	0.04	0.06	0.00	0.09	0.13	0.07	0.08
	UEP	0.00	0.05	0.07	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.02	0.02
	NILF	0.00	0.15	0.23	0.15	0.04	0.09	0.00	0.07	0.00	0.00	0.09	0.08
Other Tertiary	Full-time	1.87	5.45	3.74	3.41	3.93	4.62	5.30	4.59	2.74	0.90	3.69	3.65
	Part-time	0.08	0.49	1.44	1.84	1.61	1.72	2.10	1.16	1.00	0.39	0.99	1.12
	UEP	0.55	0.37	0.11	0.06	0.12	0.00	0.00	0.07	0.18	0.00	0.25	0.18
	NILF	0.30	1.79	3.04	2.83	2.12	1.28	1.82	1.64	1.92	2.70	1.73	1.90
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
Number		22737	18486	13314	10281	7629	6819	5430	4380	3288	2331	94695	
Qualifications Not Specified		1983	1716	1584	1608	1464	1302	1056	966	657	492	12828	
Age Structure*		0.24	0.20	0.14	0.11	0.08	0.07	0.06	0.05	0.03	0.02	1.00	

(continued over)

APPENDIX G.3.3 (continued)

G.3.3.3: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, European Males, 1981

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	18.61	23.97	26.02	33.49	39.62	45.19	49.54	52.82	52.03	26.62	34.48	30.67
No Qualifications	Part-time	3.34	0.25	0.26	0.31	0.35	0.36	0.44	0.76	1.28	3.84	1.10	1.19
	UEP	2.71	2.10	1.32	0.95	0.85	0.86	1.02	1.24	1.54	0.13	1.42	1.66
	NILF	18.00	0.91	0.90	0.88	1.04	1.13	1.58	2.59	6.72	36.06	6.29	6.27
Secondary School	Full-time	28.73	33.84	29.34	22.81	19.18	16.05	14.58	12.88	11.16	6.12	21.68	24.73
	Part-time	4.17	1.19	0.48	0.29	0.15	0.14	0.13	0.17	0.33	1.06	1.02	1.42
	UEP	1.54	1.53	0.93	0.41	0.24	0.21	0.22	0.20	0.22	0.08	0.69	0.91
	NILF	20.53	5.40	0.66	0.30	0.23	0.18	0.23	0.45	1.25	5.98	4.48	6.44
Bachelor's/	Full-time	0.00	4.08	8.92	9.54	7.96	6.23	4.87	4.46	4.03	2.24	5.23	4.84
Post Graduate	Part-time	0.00	0.40	0.31	0.22	0.15	0.12	0.09	0.10	0.17	0.44	0.20	0.19
	UEP	0.00	0.26	0.21	0.12	0.06	0.05	0.05	0.01	0.04	0.00	0.09	0.10
	NILF	0.01	1.07	0.42	0.15	0.08	0.05	0.03	0.06	0.33	1.22	0.33	0.33
Other Tertiary	Full-time	2.26	23.80	29.07	29.66	29.28	28.66	26.42	23.09	18.74	8.17	21.63	20.26
	Part-time	0.02	0.26	0.30	0.30	0.28	0.25	0.28	0.38	0.56	1.37	0.34	0.25
	UEP	0.03	0.50	0.50	0.32	0.26	0.28	0.29	0.27	0.26	0.05	0.28	0.29
	NILF	0.05	0.45	0.35	0.25	0.26	0.25	0.26	0.51	1.35	6.63	0.76	0.45
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		118482	105297	92208	94800	76674	67050	59763	64122	59799	47982	786177	
Qualifications Not Specified		5127	4350	3993	5394	5574	5694	5754	7248	7620	7527	58281	
Age Structure*		0.15	0.13	0.12	0.12	0.10	0.09	0.08	0.08	0.08	0.06	1.00	

(continued over)

APPENDIX G.3.3 (continued)

G.3.3.4: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, Maori Males, 1981

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	32.32	49.56	53.86	60.71	66.27	69.07	69.21	71.05	66.67	34.47	52.31	55.73
No Qualifications	Part-time	2.12	0.71	0.48	0.63	0.80	1.08	1.07	1.01	1.23	3.00	1.16	1.16
	UEP	13.27	10.27	7.46	5.50	5.05	4.49	4.18	4.77	4.26	0.41	8.20	6.85
	NILF	22.74	1.55	1.74	2.13	2.84	2.89	5.69	8.19	13.83	49.73	9.15	9.81
Secondary School	Full-time	15.17	23.14	18.62	13.16	10.22	8.98	7.94	5.78	5.59	3.00	14.61	12.60
	Part-time	1.33	0.47	0.34	0.32	0.12	0.17	0.16	0.13	0.09	0.14	0.54	0.41
	UEP	2.00	1.50	1.08	0.72	0.32	0.39	0.32	0.13	0.09	0.00	1.09	0.82
	NILF	10.03	1.58	0.28	0.35	0.24	0.26	0.27	0.34	0.38	1.77	2.96	2.03
Bachelor's/	Full-time	0.00	0.52	1.47	1.35	1.44	1.38	0.97	0.94	0.95	0.95	0.82	0.94
Post Graduate	Part-time	0.00	0.10	0.02	0.09	0.12	0.04	0.00	0.00	0.00	0.41	0.05	0.07
	UEP	0.00	0.03	0.02	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.01
	NILF	0.00	0.20	0.14	0.06	0.08	0.00	0.00	0.00	0.00	0.14	0.07	0.07
Other Tertiary	Full-time	0.90	9.76	13.84	14.40	12.18	10.80	9.50	7.05	6.16	2.72	8.50	8.84
	Part-time	0.00	0.12	0.16	0.20	0.08	0.09	0.32	0.13	0.00	0.41	0.11	0.13
	UEP	0.08	0.39	0.30	0.32	0.16	0.13	0.16	0.27	0.00	0.00	0.21	0.20
	NILF	0.03	0.10	0.18	0.06	0.04	0.22	0.21	0.20	0.76	2.86	0.19	0.33
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		23214	17850	13068	10416	7488	6945	5592	4467	3168	2202	94410	
Qualifications Not Specified		2103	1587	1356	1269	1110	1146	984	837	639	441	11472	
Age Structure*		0.25	0.19	0.14	0.11	0.08	0.07	0.06	0.05	0.03	0.02	1.00	

(continued over)

APPENDIX G.3.3 (Continued)

G.3.3.5: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, European Females, 1986

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	9.36	9.00	6.82	8.55	15.56	20.54	21.60	18.83	12.46	3.59	12.14	11.24
No Qualifications	Part-time	2.89	1.50	3.57	6.66	10.57	11.10	11.43	10.45	7.59	3.23	6.49	5.46
	UEP	4.40	1.86	1.65	1.64	1.88	1.68	1.59	1.36	0.87	0.23	1.88	2.20
	NILF	16.04	7.67	11.75	11.51	11.44	11.83	14.62	22.15	34.38	48.77	16.91	14.15
Secondary School	Full-time	25.32	31.58	16.23	11.14	10.16	10.67	10.14	8.28	5.92	2.24	14.75	18.10
	Part-time	6.20	3.17	5.55	8.03	6.97	5.75	4.84	4.03	3.10	1.68	5.20	5.36
	UEP	6.78	2.91	1.74	1.65	1.08	0.78	0.65	0.67	0.45	0.20	2.01	2.67
	NILF	20.66	9.64	13.55	12.03	6.27	4.50	4.77	6.84	11.18	19.35	11.18	12.04
Bachelor's/	Full-time	0.09	4.44	5.71	3.90	3.16	2.95	2.56	1.89	1.30	0.44	2.84	3.03
Post Graduate	Part-time	0.01	0.44	0.87	1.65	1.64	1.23	0.85	0.58	0.57	0.35	0.84	0.76
	UEP	0.01	0.48	0.29	0.26	0.23	0.17	0.10	0.07	0.04	0.03	0.19	0.22
	NILF	0.02	0.94	1.25	2.11	1.28	0.74	0.44	0.57	0.83	1.32	0.97	0.91
Other Tertiary	Full-time	6.80	20.90	16.58	11.77	13.18	14.60	14.48	11.92	7.77	2.55	12.58	13.39
	Part-time	0.34	1.54	4.78	7.93	8.85	7.90	6.50	5.66	4.08	1.86	4.88	4.24
	UEP	0.53	1.07	1.13	1.29	1.15	0.93	0.76	0.63	0.49	0.23	0.87	0.91
	NILF	0.57	2.86	8.52	9.89	6.58	4.64	4.68	6.06	8.97	13.92	6.27	5.32
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		110004	105222	103854	98985	98547	78300	67428	58671	60645	58545	840201	
Qualifications Not Specified		2058	1347	1512	2121	3312	3363	3417	3363	4959	7038	32490	
Age Structure*		0.13	0.13	0.12	0.12	0.12	0.09	0.08	0.07	0.07	0.07	1.00	

(continued over)

APPENDIX G.3.3 (continued)

G.3.3.6: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, Maori Females, 1986

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	16.86	15.28	15.13	19.46	27.03	29.26	27.62	22.60	16.49	7.06	19.00	19.66
No Qualifications	Part-time	3.74	3.08	5.63	8.15	10.48	10.71	10.06	8.84	6.33	2.87	6.20	6.84
	UEP	12.84	8.62	7.07	6.32	5.57	4.84	3.95	3.29	2.11	0.88	7.50	6.24
	NILF	27.26	27.27	30.11	27.05	24.79	26.38	27.75	36.42	48.95	68.76	29.64	32.35
Secondary School	Full-time	13.51	15.84	10.96	9.48	7.39	6.95	7.05	5.72	4.29	1.32	10.71	9.11
	Part-time	2.94	2.09	3.40	4.07	2.94	2.36	2.29	1.79	1.66	0.99	2.76	2.61
	UEP	5.36	3.64	2.85	2.31	1.30	0.76	0.99	0.69	0.60	0.11	2.82	2.18
	NILF	11.14	9.66	10.29	8.24	4.68	3.48	4.85	5.49	6.78	9.16	8.43	7.68
Bachelor's/	Full-time	0.06	0.86	1.04	0.85	0.71	0.88	0.76	0.40	0.30	0.11	0.65	0.63
Post Graduate	Part-time	0.03	0.04	0.15	0.23	0.12	0.16	0.13	0.17	0.00	0.00	0.10	0.11
	UEP	0.03	0.15	0.08	0.07	0.09	0.12	0.00	0.06	0.08	0.00	0.08	0.07
	NILF	0.01	0.14	0.23	0.23	0.18	0.16	0.04	0.06	0.15	0.33	0.14	0.15
Other Tertiary	Full-time	4.06	8.49	6.58	6.71	8.07	8.79	9.38	8.38	6.25	1.77	6.85	6.88
	Part-time	0.39	0.81	1.86	2.47	2.74	2.40	2.11	2.20	1.58	0.77	1.54	1.71
	UEP	1.01	1.32	1.07	1.03	0.82	0.64	0.67	0.81	0.23	0.11	0.96	0.84
	NILF	0.77	2.70	3.55	3.34	3.09	2.12	2.33	3.06	4.22	5.74	2.63	2.94
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		23079	21531	17907	13107	10188	7506	6681	5190	3984	2718	111891	
Qualifications Not Specified		1473	900	795	849	879	879	861	723	729	531	8619	
Age Structure*		0.21	0.19	0.16	0.12	0.09	0.07	0.06	0.05	0.04	0.02	1.00	

(continued over)

APPENDIX G.3.3 (continued)

G.3.3.7: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, European Males, 1986

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	16.77	19.07	19.92	20.51	26.68	31.64	34.21	35.41	33.69	13.45	24.21	22.56
No Qualifications	Part-time	3.35	0.88	0.85	0.85	0.96	1.09	1.21	1.47	1.77	2.55	1.48	1.54
	UEP	4.74	2.00	1.30	0.91	0.72	0.70	0.65	0.77	1.06	0.46	1.52	1.93
	NILF	15.52	1.65	1.60	1.39	1.34	1.39	1.65	2.58	5.37	25.52	5.38	5.25
Secondary School	Full-time	26.88	30.75	23.91	22.51	17.57	14.97	13.69	13.99	13.32	6.84	19.94	22.57
	Part-time	4.35	1.34	0.77	0.69	0.40	0.35	0.33	0.46	0.61	1.27	1.19	1.53
	UEP	5.58	2.46	0.85	0.51	0.28	0.18	0.24	0.28	0.44	0.27	1.36	1.93
	NILF	18.16	4.19	0.84	0.65	0.39	0.34	0.40	0.75	1.93	10.82	4.18	5.29
Bachelor's/	Full-time	0.06	5.20	10.16	11.49	11.53	9.58	7.62	5.92	5.05	2.92	7.05	6.59
Post Graduate	Part-time	0.01	0.33	0.31	0.27	0.26	0.19	0.18	0.14	0.23	0.60	0.24	0.22
	UEP	0.01	0.51	0.30	0.15	0.10	0.09	0.05	0.09	0.08	0.06	0.16	0.19
	NILF	0.03	1.03	0.48	0.24	0.17	0.14	0.10	0.12	0.47	2.01	0.44	0.41
Other Tertiary	Full-time	4.04	28.25	36.28	37.68	37.69	37.55	37.53	35.25	30.62	11.94	29.34	27.55
	Part-time	0.09	0.63	0.92	0.91	0.86	0.82	0.92	0.98	1.34	2.42	0.89	0.73
	UEP	0.21	0.83	0.74	0.53	0.48	0.41	0.45	0.51	0.74	0.54	0.54	0.54
	NILF	0.21	0.88	0.76	0.69	0.57	0.57	0.77	1.29	3.27	18.33	2.08	1.18
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		114798	108666	103929	97593	99396	80322	69138	61737	65439	58455	859473	
Qualifications Not Specified		2718	1704	1680	1746	2247	2241	2343	2346	3180	4467	24672	
Age Structure*		0.13	0.13	0.12	0.11	0.12	0.09	0.08	0.07	0.08	0.07	1.00	

(continued over)

APPENDIX G.3.3 (continued)

G.3.3.8: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, Maori Males, 1986

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	27.21	35.95	39.77	41.87	47.28	52.02	51.18	47.93	46.70	20.11	39.03	40.56
No Qualifications	Part-time	3.80	3.14	3.68	3.69	4.46	3.92	4.98	5.27	5.49	3.80	3.92	4.11
	UEP	14.08	9.35	6.49	4.95	3.87	3.96	2.98	3.92	3.48	1.56	7.48	6.12
	NILF	20.80	5.60	4.89	5.07	4.46	5.13	5.69	8.80	14.46	45.47	9.96	10.93
Secondary School	Full-time	14.21	21.14	16.98	14.25	10.00	8.81	10.17	10.03	8.75	4.36	14.31	12.72
	Part-time	2.04	1.30	1.01	0.85	0.65	0.60	1.07	0.90	0.96	0.78	1.19	1.06
	UEP	4.29	2.51	1.26	0.88	0.57	0.64	0.44	0.67	0.67	0.45	1.87	1.43
	NILF	9.07	1.63	0.88	0.73	0.42	0.60	0.93	1.23	2.00	7.60	2.90	2.54
Bachelor's/	Full-time	0.01	0.94	1.92	2.01	2.05	2.12	1.69	1.29	1.19	0.45	1.26	1.37
Post Graduate	Part-time	0.00	0.04	0.13	0.07	0.09	0.08	0.04	0.00	0.15	0.22	0.06	0.08
	UEP	0.00	0.11	0.09	0.12	0.00	0.04	0.00	0.00	0.00	0.11	0.05	0.05
	NILF	0.00	0.21	0.04	0.17	0.06	0.08	0.00	0.28	0.00	0.56	0.10	0.12
Other Tertiary	Full-time	3.43	15.29	20.27	22.51	23.39	19.74	18.17	16.59	12.75	5.92	15.34	15.97
	Part-time	0.18	0.73	0.81	1.09	0.92	0.80	1.16	1.35	0.67	0.67	0.74	0.81
	UEP	0.61	1.38	1.10	0.92	0.92	0.68	0.53	0.45	0.59	0.34	0.88	0.81
	NILF	0.26	0.67	0.68	0.83	0.86	0.76	0.98	1.29	2.15	7.60	0.90	1.32
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		23196	21015	16692	12675	10083	7491	6753	5352	4047	2685	109989	
Qualifications Not Specified		1620	942	741	627	600	558	639	555	537	399	7218	
Age Structure*		0.21	0.19	0.15	0.12	0.09	0.07	0.06	0.05	0.04	0.02	1.00	

(continued over)

APPENDIX G.3.3 (Continued)

G.3.3.9: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, European Females, 1991

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	2.90	5.53	4.61	5.24	8.94	15.78	17.91	16.31	10.42	2.96	8.71	7.39
No Qualifications	Part-time	2.41	1.17	2.46	4.30	6.15	8.56	9.29	9.42	7.27	3.16	5.16	4.29
	UEP	2.73	1.92	1.50	1.34	1.38	1.46	1.50	1.28	0.74	0.10	1.49	1.68
	NILF	14.84	7.60	10.11	10.31	8.84	9.30	11.80	17.82	29.32	42.27	14.39	12.55
Secondary School	Full-time	13.55	23.95	16.96	10.80	11.62	11.50	11.23	9.15	6.08	2.03	12.51	14.13
	Part-time	11.47	3.56	5.35	7.85	8.32	6.00	4.97	4.67	3.67	2.07	6.15	6.65
	UEP	7.20	3.85	1.97	1.65	1.31	0.88	0.73	0.74	0.51	0.12	2.12	2.81
	NILF	30.41	10.76	12.76	12.35	7.90	4.36	4.43	6.58	11.99	21.47	12.35	13.89
Bachelor's/	Full-time	0.06	4.82	6.66	4.86	4.49	4.37	3.80	2.73	1.55	0.57	3.64	3.76
Post Graduate	Part-time	0.03	0.77	0.93	1.89	2.24	1.58	1.06	0.86	0.69	0.42	1.10	1.03
	UEP	0.04	0.99	0.54	0.32	0.31	0.24	0.16	0.12	0.09	0.02	0.31	0.37
	NILF	0.08	1.56	1.30	2.14	1.83	0.92	0.56	0.55	0.81	1.63	1.18	1.17
Other Tertiary	Full-time	7.38	22.14	18.85	14.52	16.07	19.03	18.68	15.33	9.77	2.94	15.08	15.45
	Part-time	1.41	2.57	5.05	9.44	10.71	9.27	7.75	7.02	5.77	2.94	6.31	5.68
	UEP	2.76	3.37	2.18	1.75	1.62	1.41	1.25	0.99	0.71	0.13	1.77	2.08
	NILF	2.73	5.43	8.79	11.23	8.27	5.34	4.88	6.43	10.61	17.17	7.72	7.09
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		99900	97974	102231	105753	98832	97539	77256	66105	57210	59436	862236	
Qualifications Not Specified		2349	996	1080	1149	1410	2115	2178	2301	2442	3735	19755	
Age Structure*		0.12	0.11	0.12	0.12	0.11	0.11	0.09	0.08	0.07	0.07	1.00	

(continued over)

APPENDIX G.3.3 (continued)

G.3.3.10: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, Maori Females, 1991

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	3.93	6.82	7.33	10.68	15.43	20.24	21.87	17.01	11.79	3.93	10.31	11.78
No Qualifications	Part-time	2.11	1.68	3.37	5.02	6.43	7.77	8.64	7.34	6.32	3.19	4.35	5.04
	UEP	6.80	7.47	6.93	6.34	5.59	5.26	4.71	2.79	1.76	0.33	5.92	5.25
	NILF	30.00	28.16	31.91	31.06	27.24	27.95	30.63	37.08	47.08	64.65	31.75	33.72
Secondary School	Full-time	6.84	11.94	8.68	7.92	8.77	7.35	6.13	5.81	3.89	0.98	7.99	7.31
	Part-time	5.20	2.21	2.78	3.32	3.44	2.66	1.95	1.95	1.76	0.82	3.07	2.78
	UEP	7.11	4.44	3.25	2.62	1.99	1.32	0.93	0.88	0.61	0.08	3.35	2.61
	NILF	23.83	11.41	11.26	9.99	7.18	4.90	4.46	6.55	8.75	11.78	11.80	10.29
Bachelor's/	Full-time	0.03	0.94	1.16	1.15	1.22	1.20	1.26	0.88	0.36	0.08	0.85	0.87
Post Graduate	Part-time	0.01	0.17	0.15	0.24	0.30	0.18	0.24	0.23	0.00	0.08	0.16	0.17
	UEP	0.03	0.22	0.18	0.09	0.07	0.18	0.08	0.05	0.00	0.00	0.11	0.10
	NILF	0.14	0.41	0.36	0.38	0.40	0.21	0.32	0.37	0.24	0.25	0.31	0.31
Other Tertiary	Full-time	4.17	9.60	8.53	8.37	10.52	12.02	10.02	9.62	7.17	2.78	8.29	8.48
	Part-time	0.92	1.78	2.51	3.21	3.58	3.11	2.92	2.93	2.31	1.96	2.37	2.54
	UEP	4.19	4.69	3.22	2.66	2.17	1.49	1.54	1.21	0.79	0.25	2.95	2.44
	NILF	4.71	8.06	8.39	6.95	5.68	4.16	4.30	5.30	7.17	8.84	6.43	6.31
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		23433	21411	20214	17271	12831	10035	7395	6456	4938	3666	127650	
Qualifications Not Specified		1446	642	606	642	570	582	513	510	468	399	6378	
Age Structure*		0.18	0.17	0.16	0.14	0.10	0.08	0.06	0.05	0.04	0.03	1.00	

(continued over)

APPENDIX G.3.3 (continued)

G.3.3.11: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, European Males, 1991

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	6.50	12.00	14.38	15.20	16.53	22.32	26.67	27.92	25.19	10.37	17.00	15.21
No Qualifications	Part-time	3.07	0.65	0.83	0.83	0.86	1.03	1.29	1.59	2.02	2.58	1.41	1.42
	UEP	3.65	3.83	3.04	2.25	1.75	1.73	1.69	1.94	1.78	0.27	2.33	2.68
	NILF	15.65	3.57	3.48	3.15	2.90	2.86	3.22	4.54	9.37	26.47	6.87	6.63
Secondary School	Full-time	15.97	23.13	21.13	19.10	18.70	15.40	13.59	12.22	10.71	5.16	16.37	17.69
	Part-time	8.78	1.83	0.87	0.72	0.74	0.54	0.49	0.57	0.90	1.42	1.85	2.47
	UEP	6.64	4.11	2.22	1.35	1.09	0.72	0.70	0.74	0.75	0.20	2.08	2.75
	NILF	28.42	6.92	1.86	1.31	1.16	0.82	0.84	1.26	3.28	10.77	5.96	7.81
Bachelor's/	Full-time	0.05	4.74	9.15	11.06	11.87	11.38	9.14	6.79	4.70	2.52	7.37	6.87
Post Graduate	Part-time	0.03	0.54	0.41	0.35	0.33	0.37	0.29	0.30	0.39	0.75	0.36	0.33
	UEP	0.03	1.16	0.65	0.40	0.30	0.27	0.21	0.22	0.14	0.04	0.37	0.43
	NILF	0.09	1.80	0.74	0.43	0.33	0.33	0.24	0.31	0.64	2.16	0.67	0.66
Other Tertiary	Full-time	6.85	28.01	35.07	38.28	38.05	37.41	36.62	35.06	28.65	10.38	29.79	28.48
	Part-time	0.64	1.11	1.26	1.28	1.37	1.26	1.44	1.71	2.24	3.21	1.44	1.26
	UEP	1.83	3.52	2.77	2.23	2.03	1.79	1.68	1.85	2.18	0.46	2.11	2.29
	NILF	1.81	3.09	2.13	2.05	1.99	1.77	1.88	2.99	7.06	23.24	4.02	3.02
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		104193	100929	98943	103371	96879	97761	78612	66804	59205	61665	868362	
Qualifications Not Specified		2814	1302	1236	1188	1254	1503	1434	1482	1557	2286	16056	
Age Structure*		0.12	0.12	0.11	0.12	0.11	0.11	0.09	0.08	0.07	0.07	1.00	

(continued over)

APPENDIX G.3.3 (continued)

G.3.3.12: Percentage of Population at Each Age by Highest Qualification and Labour Force Status, Maori Males, 1991

Highest Qual. & LF Status		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL	Standardised^
Still at School/	Full-time	8.11	16.44	20.67	25.41	27.81	32.99	36.50	33.66	28.18	11.50	21.54	23.71
No Qualifications	Part-time	2.21	1.52	1.88	2.27	2.41	2.97	3.07	3.29	3.38	2.90	2.31	2.50
	UEP	9.84	12.43	11.39	9.95	8.23	7.57	7.62	6.85	5.59	1.02	9.45	8.55
	NILF	30.21	15.71	15.16	13.78	13.42	12.97	14.87	18.47	28.36	53.66	19.43	20.29
Secondary School	Full-time	8.08	15.29	13.87	11.99	10.49	8.25	6.59	6.99	6.02	2.64	10.51	9.58
	Part-time	3.56	1.23	0.86	0.62	0.62	0.49	0.29	0.79	0.98	0.68	1.32	1.07
	UEP	6.20	5.05	3.46	2.37	1.79	0.99	1.20	1.34	1.23	0.26	3.31	2.63
	NILF	20.32	5.34	2.89	2.31	1.84	1.33	1.82	2.69	4.05	8.09	6.47	5.24
Bachelor's/	Full-time	0.08	0.90	1.92	2.02	2.31	2.26	2.24	1.62	1.10	0.68	1.41	1.54
Post Graduate	Part-time	0.04	0.16	0.10	0.06	0.12	0.09	0.08	0.05	0.18	0.17	0.10	0.10
	UEP	0.09	0.31	0.25	0.15	0.10	0.12	0.04	0.14	0.06	0.09	0.16	0.14
	NILF	0.09	0.48	0.35	0.19	0.22	0.03	0.17	0.19	0.12	0.77	0.25	0.25
Other Tertiary	Full-time	4.45	14.47	17.69	20.19	22.39	21.78	17.90	16.30	11.72	4.51	15.04	15.58
	Part-time	0.49	1.00	0.94	1.14	1.22	1.27	1.41	1.30	1.35	1.02	1.01	1.09
	UEP	3.16	5.44	4.63	4.22	3.53	3.37	2.82	2.31	1.60	0.68	3.75	3.40
	NILF	3.07	4.23	3.94	3.32	3.50	3.52	3.40	4.03	6.08	11.33	3.94	4.33
TOTAL*		100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number		23256	20073	18144	15561	12072	9711	7242	6480	4887	3522	120948	
Qualifications Not Specified		1713	687	591	519	462	396	336	399	345	270	5718	
Age Structure*		0.19	0.17	0.15	0.13	0.10	0.08	0.06	0.05	0.04	0.03	1.00	

Notes: UEP = Unemployed; NILF = Not in the Labour Force.

*Excludes Qualifications Not Specified.

^Data for Maori standardised to age structure of European population by sex, and vice versa.

Source: Database B

APPENDIX H

APPENDIX H.1

Mean Income (in $1991), Maori and Non-Maori, by Sex, 1951-1991

	MALES			FEMALES		
	Dollars		Per Cent	Dollars		Per Cent
	Non-Maori	Maori	Maori/N-M	Non-Maori	Maori	Maori/N-M
ACTIVELY ENGAGED						
1951	21,848	13,705	62.73	10,501	8,024	76.41
1956	27,722	16,600	59.88	11,716	9,397	80.21
1961	28,971	19,127	66.02	12,532	11,561	92.25
1966	30,253	21,160	69.94	13,923	11,303	81.18
1971	32,054	23,164	72.27	15,388	12,287	79.85
1976	37,145	27,189	73.20	18,553	16,846	90.80
1981	39,407	30,836	78.25	21,310	19,327	90.69
1986	33,520	25,829	77.06	19,555	17,316	88.55
1991	31,892	24,209	75.91	18,498	17,384	93.98
TOTAL (Actively Engaged plus Not Actively Engaged)						
1951	18,807	11,659	61.99	3,534	2,119	59.96
1956*	21,833	14,050	64.35	4,054	2,600	64.13
1961	24,958	16,441	65.87	4,573	3,082	67.40
1966	26,047	18,478	70.94	5,571	3,602	64.66
1971	27,191	19,687	72.40	6,709	4,766	71.04
1976	30,751	22,148	72.02	9,211	6,644	72.13
1981	31,546	24,215	76.76	11,216	8,609	76.76
1986	28,296	21,585	76.28	14,668	12,557	85.61
1991	24,978	16,669	66.73	14,639	11,890	81.22

Notes: *Data for 1956 interpolated by Martin.
All data CPI adjusted to $1991 (see Chapter 5).
Maori/N-M = Maori incomes as percentage of Non-Maori Incomes

Source: Martin 1997, Figure 5 (Data kindly provided by Martin).

APPENDIX H.2

Mean Income (in $1991), by Labour Force Status, Sex and Ethnicity, Crude Mean Income Differential, and Maori Mean Income as a Percentage of European Mean Income, by Labour Force Status and Sex, Population Aged 15-64 Years, 1981-1991

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
EUROPEAN						
Full-Time	38,485	32,973	33,331	24,428	22,018	23,651
Part-Time	16,141	19,612	16,066	11,937	11,052	11,843
Unemployed	9,960	9,170	10,184	7,096	6,379	8,082
Not in the Labour Force	8,917	10,468	9,766	5,376	7,377	8,026
TOTAL	33,903	28,945	26,819	13,775	14,355	15,213
Income not specified (%)*	5.6	2.4	2.2	8.3	5.8	5.4
MAORI ETHNIC GROUP						
Full-Time	29,597	25,258	25,158	20,792	17,817	18,815
Part-Time	13,467	20,113	14,805	10,292	10,166	10,316
Unemployed	6,463	8,572	8,290	3,991	7,086	8,151
Not in the Labour Force	4,475	7,392	7,433	4,131	7,326	8,224
TOTAL	24,429	21,073	16,786	10,676	12,119	11,894
Income not specified (%)*	12.2	7.0	6.8	15.8	14.1	10.4
INCOME DIFFERENTIAL (European Mean Income Minus Maori Mean Income)						
Full-Time	8,888	7,715	8,172	3,636	4,200	4,837
Part-Time	2,674	-501	1,262	1,645	886	1,527
Unemployed	3,497	599	1,894	3,105	-706	-70
Not in the Labour Force	4,442	3,076	2,333	1,245	51	-198
TOTAL	9,474	7,872	10,032	3,100	2,236	3,318
MAORI INCOME AS PERCENTAGE OF EUROPEAN INCOME (Income Relativity)						
Full-Time	76.91	76.60	75.48	85.12	80.92	79.55
Part-Time	83.44	102.55	92.15	86.22	91.98	87.11
Unemployed	64.89	93.47	81.40	56.24	111.07	100.86
Not in the Labour Force	50.19	70.61	76.11	76.84	99.31	102.47
TOTAL	72.06	72.80	62.59	77.50	84.42	78.19

Notes: * As a percentage of all persons not specifying an income.

Source: Database B

APPENDIX H.3

Maori Mean Income (in $1991) Standardised to European Age Structure, and to European Age-Qualification Structure, by Labour Force Status and Sex; Standardised Mean Income Differentials; and Standardised Mean Income Relativities (Maori Mean Income as a Percentage of European Mean Income), by Labour Force Status and Sex, Population Aged 15-64 Years, 1981-1991

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
MAORI (Standardised for Age)						
Full-Time	31,164	26,633	26,138	21,279	18,273	19,053
Part-Time	14,327	19,199	14,364	11,062	10,611	10,753
Unemployed	7,115	8,531	8,339	4,601	7,111	8,068
Not in the Labour Force	5,643	7,952	7,487	4,873	7,676	8,258
TOTAL	26,204	22,332	17,938	11,239	12,454	12,292
MAORI (Standardised for Age and Qualifications)						
Full-Time	33,690	28,887	28,676	23,282	20431	21,778
Part-Time	14,307	19,692	13,852	12,379	11557	11,689
Unemployed	7,421	8,416	7,990	4,894	6980	8,201
Not in the Labour Force	6,308	8,599	7,715	5,037	7717	8,369
TOTAL	28,652	24,415	20,475	12,945	13,556	13,568
ETHNIC DIFFERENTIAL (1) European Mean Income minus Maori Mean Income						
Full-Time	7,321	6,340	7,193	3,149	3,745	4,598
Part-Time	1,814	414	1,702	875	440	1,090
Unemployed	2,845	639	1,844	2,496	-731	13
Not in the Labour Force	3,274	2,516	2,279	503	-299	-232
TOTAL	7,700	6,613	8,881	2,536	1,902	2,921
ETHNIC DIFFERENTIAL (2) European Mean Income minus Maori Mean Income						
Full-Time	4,795	4,086	4,655	1,146	1,587	1,873
Part-Time	1,834	-79	2,214	-442	-505	154
Unemployed	2,539	754	2,194	2,202	-601	-119
Not in the Labour Force	2,609	1,869	2,051	339	-340	-344
TOTAL	5,251	4,530	6,343	831	800	1,645
MAORI MEAN INCOME AS PERCENTAGE OF EUROPEAN MEAN INCOME (1)						
Full-Time	80.98	80.77	78.42	87.11	82.99	80.56
Part-Time	88.76	97.89	89.41	92.67	96.02	90.79
Unemployed	71.44	93.03	81.89	64.83	111.47	99.83
Not in the Labour Force	63.29	75.97	76.66	90.65	104.06	102.89
TOTAL	77.29	77.15	66.89	81.59	86.75	80.80
MAORI MEAN INCOME AS PERCENTAGE OF EUROPEAN MEAN INCOME (2)						
Full-Time	87.54	87.61	86.03	95.31	92.79	92.08
Part-Time	88.64	100.40	86.22	103.70	104.57	98.70
Unemployed	74.51	91.78	78.46	68.97	109.41	101.48
Not in the Labour Force	70.75	82.15	79.00	93.70	104.62	104.28
TOTAL	84.51	84.35	76.35	93.97	94.43	89.19

Notes: (1) Standardised to European Age Structure

(2) Standardised to European Age and Qualification Structure

Source: Database B

APPENDIX H. 4

Mean Income (in $1991), by Highest Qualification, Sex and Ethnicity; Crude Mean Income Differential; and Maori Mean Income as a Percentage of European Mean Income, by Highest Qualification and Sex, Population Aged 15-64 Years, 1981-1991

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
EUROPEAN						
Still at School/No Qualifications	30,569	23,534	20,321	10,993	11,412	11,681
Secondary School Quals. Only	28,644	24,025	21,768	13,403	13,224	13,160
Bachelors/Post-Graduate Quals.	54,486	48,477	48,620	24,598	23,834	26,282
Other Tertiary Qualifications	40,767	33,663	29,977	18,721	17,682	17,908
Qualifications Not Specified	32,067	22,686	17,773	12,709	11,979	11,476
TOTAL	33,903	28,945	26,819	13,775	14,355	15,213
Income not specified (%)*	5.6	2.4	2.2	8.3	5.8	5.4
MAORI ETHNIC GROUP						
Still at School/No Qualifications	22,324	18,545	14,128	8,834	10,296	10,203
Secondary School Quals. Only	23,252	19,864	15,222	11,991	12,095	11,347
Bachelors/Post-Graduate Quals.	46,139	37,753	37,226	25,244	23,783	24,484
Other Tertiary Qualifications	35,385	27,927	21,399	19,504	17,311	15,051
Qualifications Not Specified	24,753	17,230	12,751	10,445	10,565	10,206
TOTAL	24,429	21,073	16,786	10,676	12,119	11,894
Income not specified (%)*	12.2	7.0	6.8	15.8	14.1	10.4
INCOME DIFFERENTIAL (European Mean Income Minus Maori Mean Income)						
Still at School/No Qualifications	8,245	4,989	6,193	2,159	1,116	1,478
Secondary School Quals. Only	5,392	4,161	6,546	1,413	1,129	1,813
Bachelors/Post-Graduate Quals.	8,347	10,724	11,394	-646	51	1,797
Other Tertiary Qualifications	5,381	5,736	8,579	-783	371	2,857
Qualifications Not Specified	7,313	5,456	5,022	2,264	1,414	1,270
TOTAL	9,474	7,872	10,032	3,100	2,236	3,318
MAORI INCOME AS PERCENTAGE OF EUROPEAN INCOME (Income Relativity)						
Still at School/No Qualifications	73.03	78.80	69.53	80.36	90.22	87.35
Secondary School Quals. Only	81.17	82.68	69.93	89.46	91.46	86.23
Bachelors/Post-Graduate Quals.	84.68	77.88	76.57	102.63	99.79	93.16
Other Tertiary Qualifications	86.80	82.96	71.38	104.18	97.90	84.05
Qualifications Not Specified	77.19	75.95	71.74	82.18	88.20	88.93
TOTAL	72.06	72.80	62.59	77.50	84.42	78.19

Notes: * As a percentage of all persons.

Source: Database B

APPENDIX H.5

Maori Mean Income (in $1991) Standardised to European Age Structure, and to European Age-Labour Force Structure, by Highest Qualification and Sex; Standardised Mean Income Differentials, and Standardised Mean Income Relativities (Maori Mean Income as a Percentage of European Mean Income), by Highest Qualification and Sex, Population Aged 15-64 Years, 1981-1991

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
MAORI (Standardised for Age)						
Still at School/No Qualifications	24,174	19,766	15,086	9,732	10,706	10,393
Secondary School Quals. Only	25,684	20,829	16,640	12,572	12,245	11,939
Bachelors/Post-Graduate Quals.	48,004	39,965	41,218	25,959	24,340	25,641
Other Tertiary Qualifications	36,633	28,765	22,635	20,476	17,985	16,202
TOTAL*	26,204	22,332	17,938	11,239	12,454	12,292
MAORI (Standardised for Age and Labour Force Status)						
Still at School/No Qualifications	25,298	20,838	17,790	10,198	11,061	11,177
Secondary School Quals. Only	25,653	21,430	18,526	12,905	12,652	12,755
Bachelors/Post-Graduate Quals.	47,887	40,947	43,117	22,882	22,610	25,245
Other Tertiary Qualifications	36,994	29,488	25,304	19,142	17,578	16,983
TOTAL*	27,076	23,356	20,965	11,948	12,579	12,985
ETHNIC DIFFERENTIAL (1) European Mean Income minus Maori Mean Income						
Still at School/No Qualifications	6,395	3,768	5,235	1,261	707	1,288
Secondary School Quals. Only	2,961	3,196	5,128	832	978	1,221
Bachelors/Post-Graduate Quals.	6,482	8,512	7,402	-1,362	-506	641
Other Tertiary Qualifications	4,134	4,898	7,343	-1,755	-303	1,707
TOTAL*	7,700	6,613	8,881	2,536	1,902	2,921
ETHNIC DIFFERENTIAL (2)						
Still at School/No Qualifications	5,271	2,696	2,531	795	352	504
Secondary School Quals. Only	2,991	2,595	3,242	498	571	405
Bachelors/Post-Graduate Quals.	6,599	7,530	5,504	1,716	1,224	1,037
Other Tertiary Qualifications	3,773	4,175	4,674	-421	104	925
TOTAL*	6,827	5,589	5,854	1,828	1,776	2,228
MAORI MEAN INCOME AS A PERCENTAGE OF EUROPEAN MEAN INCOME (1)						
Still at School/No Qualifications	79.08	83.99	74.24	88.53	93.81	88.97
Secondary School Quals. Only	89.66	86.70	76.44	93.79	92.60	90.72
Bachelors/Post-Graduate Quals.	88.10	82.44	84.78	105.54	102.12	97.56
Other Tertiary Qualifications	89.86	85.45	75.51	109.37	101.71	90.47
TOTAL*	77.29	77.15	66.89	81.59	86.75	80.80
MAORI MEAN INCOME AS A PERCENTAGE OF EUROPEAN MEAN INCOME (2)						
Still at School/No Qualifications	82.76	88.54	87.55	92.77	96.92	95.68
Secondary School Quals. Only	89.56	89.20	85.11	96.28	95.68	96.92
Bachelors/Post-Graduate Quals.	87.89	84.47	88.68	93.03	94.86	96.05
Other Tertiary Qualifications	90.74	87.60	84.41	102.25	99.41	94.84
TOTAL*	79.86	80.69	78.17	86.73	87.63	85.36

Notes: (1) Standardised to European Age Structure

(2) Standardised to European Age and Labour Force Structure

Total includes Income for those who did not specify their qualifications.

Source: Database B

APPENDIX H.6

Mean Total Income (in $1991), by Age, Sex and Ethnicity, and Maori Mean Total Income as a Percentage of European Mean Total Income, by Sex and Age, Population Aged 15-64 Years, 1981-1991

	MALES			FEMALES		
Age Group	1981	1986	1991	1981	1986	1991
	EUROPEAN					
15-19	9,232	8,202	5,553	7,487	7,182	5,052
20-24	25,071	21,848	17,727	17,314	16,990	15,448
25-29	34,402	29,211	26,227	14,255	16,166	17,921
30-34	41,523	33,784	31,853	13,312	14,231	16,466
35-39	44,466	37,458	34,937	15,432	15,502	17,246
40-44	45,015	38,370	36,768	16,479	16,691	18,650
45-49	43,527	37,465	35,853	15,598	16,355	18,229
50-54	41,952	35,089	33,073	13,881	14,608	16,042
55-59	38,562	32,714	28,238	11,920	12,822	13,301
60-64	31,058	24,834	20,797	14,089	14,028	13,167
Total	33,903	28,945	26,819	13,775	14,355	15,213
	MAORI ETHNIC GROUP					
15-19	9,295	8,658	5,230	6,094	7,379	5,254
20-24	22,391	18,940	13,640	11,042	13,092	12,476
25-29	28,539	23,642	18,095	10,604	12,989	13,285
30-34	32,110	26,302	21,240	12,046	13,154	13,737
35-39	32,987	28,135	23,173	13,713	14,099	14,602
40-44	33,916	27,687	23,925	14,150	14,289	14,687
45-49	32,027	27,876	22,958	13,553	14,252	13,869
50-54	30,106	25,701	21,382	11,912	13,155	12,869
55-59	27,689	23,891	17,990	10,799	11,640	11,275
60-64	22,827	17,520	13,084	11,765	11,516	10,236
Total	24,429	21,073	16,786	10,676	12,119	11,894
MAORI INCOME AS PERCENTAGE OF EUROPEAN INCOME (Income Relativity)						
15-19	100.68	105.56	94.19	81.40	102.74	104.00
20-24	89.31	86.69	76.95	63.78	77.06	80.76
25-29	82.96	80.94	68.99	74.39	80.34	74.13
30-34	77.33	77.85	66.68	90.49	92.43	83.43
35-39	74.18	75.11	66.33	88.86	90.95	84.67
40-44	75.34	72.16	65.07	85.87	85.60	78.75
45-49	73.58	74.41	64.03	86.89	87.14	76.08
50-54	71.76	73.24	64.65	85.81	90.05	80.22
55-59	71.80	73.03	63.71	90.59	90.78	84.76
60-64	73.50	70.55	62.91	83.51	82.10	77.74
Total	72.06	72.80	62.59	77.50	84.42	78.19

Source: Database B

APPENDIX H.7

Mean Total Incomes for European and Maori Populations (in $1991), and Effect of Standardising Maori Mean Total Income to European Age, Labour Force and Qualification Distributions, Singly and in Various Combinations, Population Aged 15-64 Years, by Sex, 1981-1991

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
European Mean Total Income*	33,903	28,945	26,819	13,775	14,355	15,213
Maori Mean Total Income*	24,429	21,073	16,786	10,676	12,119	11,894
Maori Mean Total Income* standardised for:						
Age Structure Only	26,204	22,332	17,938	11,239	12,454	12,292
Labour Force Status Only	25,598	22,220	20,287	11,297	12,185	12,802
Qualifications Only	26,826	23,320	19,043	12,150	13,170	12,908
Age Structure and Labour Force Status	27,076	23,356	20,965	11,948	12,579	12,985
Age Structure and Qualifications	28,652	24,415	20,475	12,945	13,556	13,568
Labour Force Status and Qualifications	27,599	24,109	21,925	12,235	13,242	13,954
Age, Labour Force Status and Quals.	29,258	25,256	22,870	12,988	13,652	14,286

Notes: *Mean Total Income = Mean Income of the Total Population, regardless of Labour Force Status or Qualifications.

Source: Database B

APPENDIX H.8

H.8.1: Mean Income (In $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, European Females, 1981

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	14,071	21,262	23,177	23,896	23,773	23,651	23,329	23,173	22,843	28,960	22,402
	Secondary School Quals. Only	14,703	23,740	27,507	27,822	27,990	27,408	26,818	26,954	27,603	33,537	22,630
	Bachelors/Post-Graduate Quals.	15,798	24,650	34,605	39,590	41,718	43,990	46,940	46,880	51,489	57,141	36,015
	Other Tertiary Qualifications	16,353	25,751	29,911	30,644	31,204	31,964	31,990	32,416	32,935	38,134	28,629
	Qualifications Not Specified	13,821	21,786	23,163	23,768	23,744	23,110	24,099	23,740	23,819	30,699	22,956
PART-TIME	Still at School/No Qualifications	2,634	8,718	9,733	11,302	11,967	11,631	10,717	10,719	10,876	17,655	10,938
	Secondary School Quals. Only	3,864	10,117	11,258	12,655	13,645	13,057	13,038	12,599	12,911	20,459	10,990
	Bachelors/Post-Graduate Quals.	2,185	11,395	15,030	14,810	16,909	19,823	17,295	19,418	22,184	26,436	16,628
	Other Tertiary Qualifications	8,291	14,372	12,893	13,648	14,971	16,046	15,054	14,888	15,092	21,814	14,691
	Qualifications Not Specified	4,928	8,689	9,773	10,522	11,993	11,309	11,631	11,040	11,054	17,469	11,410
UNEMPLOYED	Still at School/No Qualifications	3,830	6,938	6,800	9,153	8,550	8,582	8,411	7,920	9,330	11,697	6,050
	Secondary School Quals. Only	3,905	8,449	9,418	10,229	9,297	11,313	10,196	10,783	9,051	9,412	6,483
	Bachelors/Post-Graduate Quals.	7,395	9,096	13,451	18,965	11,260	21,915	14,453	12,698	11,876	...	12,606
	Other Tertiary Qualifications	5,624	12,016	11,144	10,021	11,239	11,687	11,863	10,599	6,666	34,957	10,442
	Qualifications Not Specified	3,894	6,987	8,049	8,304	8,547	22,390	6,386	7,899	7,155	11,428	7,314
NOT IN THE LABOUR FORCE	Still at School/No Qualifications	696	4,122	3,962	4,276	4,753	4,456	4,119	4,260	5,253	10,672	5,161
	Secondary School Quals. Only	1,576	4,915	4,010	4,266	5,362	5,932	5,862	6,497	6,921	13,591	4,454
	Bachelors/Post-Graduate Quals.	7,731	7,748	7,211	5,591	6,533	7,590	7,498	10,673	14,076	19,774	8,194
	Other Tertiary Qualifications	4,541	6,390	4,896	4,481	5,714	6,636	6,515	7,539	8,468	14,971	6,770
	Qualifications Not Specified	2,885	4,354	4,127	4,333	5,286	5,938	5,170	4,945	5,952	11,599	6,816
TOTAL MEAN INCOME		7,487	17,314	14,255	13,312	15,432	16,479	15,598	13,881	11,920	14,089	13,775
Income Not Specified (Per cent of total persons at each age)		10.15	7.39	8.78	8.47	7.72	6.98	6.80	7.26	7.60	10.38	8.25
Age Structure*		0.15	0.13	0.12	0.12	0.10	0.09	0.07	0.08	0.08	0.07	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.2: Mean Income (in $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, Maori Females, 1981

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	13,693	18,431	20,492	21,151	21,871	21,614	21,619	21,294	20,972	31,340	19,557
	Secondary School Quals. Only	14,771	22,993	25,300	25,043	26,809	28,291	26,611	28,487	22,508	31,596	21,432
	Bachelors/Post-Graduate Quals.	...	21,781	33,015	43,173	46,721	36,033	48,570	34,957	51,091	...	34,682
	Other Tertiary Qualifications	15,522	24,654	28,479	29,225	30,287	33,546	32,846	34,968	38,075	44,272	27,646
	Qualifications Not Specified	13,801	19,440	21,842	20,389	21,806	22,841	21,495	22,529	22,274	26,034	20,445
PART-TIME	Still at School/No Qualifications	4,078	7,662	9,238	10,607	10,833	10,181	10,390	10,367	9,970	17,603	9,502
	Secondary School Quals. Only	4,424	8,994	10,875	13,127	15,175	12,892	14,609	13,960	18,439	15,462	10,168
	Bachelors/Post-Graduate Quals.	...	11,697	20,168	20,571	11,764	51,091	34,957	...	...	...	19,261
	Other Tertiary Qualifications	7,059	11,044	17,517	13,966	18,254	14,445	19,505	17,920	22,857	39,663	16,278
	Qualifications Not Specified	6,740	8,739	9,412	9,400	11,628	10,698	12,338	9,528	13,506	21,008	10,374
UNEMPLOYED	Still at School/No Qualifications	2,884	4,739	5,171	7,017	5,350	5,866	5,130	5,072	6,246	...	3,756
	Secondary School Quals. Only	3,207	6,759	5,502	8,795	12,325	16,302	...	11,428	...	...	4,615
	Bachelors/Post-Graduate Quals.	...	14,117	1,008	...	...	7,395	...	...	...	...	8,627
	Other Tertiary Qualifications	3,006	6,306	8,963	7,395	9,075	...	...	11,428	13,445	...	5,082
	Qualifications Not Specified	3,116	4,677	6,487	8,123	5,826	10,151	5,714	5,445	3,697	...	4,354
NOT IN THE LABOUR FORCE	Still at School/No Qualifications	1,431	4,012	4,187	4,669	4,696	4,386	4,245	4,378	5,355	8,864	4,068
	Secondary School Quals. Only	1,518	4,259	4,015	4,789	5,691	5,504	4,141	5,404	4,930	9,075	3,498
	Bachelors/Post-Graduate Quals.	...	5,639	5,341	3,496	...	11,764	...	7,395	...	...	5,662
	Other Tertiary Qualifications	3,623	5,925	4,853	4,883	5,933	5,818	8,519	6,386	6,302	17,832	6,044
	Qualifications Not Specified	2,728	3,579	3,982	4,601	4,890	5,374	4,133	4,739	7,288	9,957	4,874
TOTAL MEAN INCOME		6,094	11,042	10,604	12,046	13,713	14,150	13,553	11,912	10,799	11,765	10,676
Income Not Specified (Per cent of total persons at each age)		19.04	14.94	15.04	14.86	14.78	13.63	14.48	14.70	14.60	17.43	15.79
Age Structure*		0.24	0.20	0.14	0.11	0.08	0.07	0.06	0.05	0.03	0.02	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.3: Mean Income (In $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, European Males, 1981

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	16,142	26,033	32,789	38,765	41,187	41,349	40,090	38,916	36,702	41,950	35,985
	Secondary School Quals. Only	15,900	27,440	36,608	44,215	47,604	48,199	47,721	46,487	44,592	48,570	34,894
	Bachelors/Post-Graduate Quals.	19,495	27,462	41,111	56,061	66,571	72,246	76,447	78,792	79,336	84,629	58,440
	Other Tertiary Qualifications	22,167	30,001	36,764	42,259	45,578	48,049	47,568	47,875	47,380	53,449	41,983
	Qualifications Not Specified	16,135	25,636	32,574	37,998	39,245	40,032	39,197	38,157	37,005	41,870	35,865
PART-TIME	Still at School/No Qualifications	2,265	16,007	23,015	28,636	22,020	28,269	23,685	24,878	22,560	25,796	14,303
	Secondary School Quals. Only	3,640	11,674	17,819	23,657	24,183	35,741	23,809	35,330	31,792	32,791	10,277
	Bachelors/Post-Graduate Quals.	...	10,718	19,089	28,551	27,908	49,504	33,402	48,341	54,582	51,024	28,553
	Other Tertiary Qualifications	9,636	19,652	22,501	32,142	34,850	34,437	37,129	31,894	28,994	32,673	30,078
	Qualifications Not Specified	3,292	11,612	15,006	28,648	50,363	25,065	19,855	22,339	26,658	24,201	22,575
UNEMPLOYED	Still at School/No Qualifications	4,146	8,609	9,675	10,640	12,333	12,269	12,631	11,590	11,998	11,335	8,774
	Secondary School Quals. Only	4,490	9,778	11,365	12,750	20,050	16,423	14,642	13,137	11,299	17,703	9,267
	Bachelors/Post-Graduate Quals.	7,395	8,376	14,453	15,639	19,558	13,344	26,352	3,809	7,107	...	12,784
	Other Tertiary Qualifications	12,253	14,781	13,927	17,020	17,948	19,490	23,053	18,426	15,509	20,294	16,572
	Qualifications Not Specified	4,298	9,585	9,882	14,149	14,877	11,503	12,137	12,067	11,137	12,773	10,068
NOT IN THE	Still at School/No Qualifications	409	6,683	7,084	8,757	10,354	10,522	11,783	15,604	16,473	15,276	8,628
LABOUR FORCE	Secondary School Quals. Only	2,012	7,866	10,579	10,295	17,597	14,303	12,869	19,785	23,391	22,052	5,585
	Bachelors/Post-Graduate Quals.	12,773	8,532	10,532	17,742	23,753	38,165	8,067	22,133	39,876	35,591	18,754
	Other Tertiary Qualifications	9,243	14,245	14,790	15,089	18,525	20,174	19,080	19,378	22,535	21,084	19,784
	Qualifications Not Specified	2,549	5,463	8,522	7,818	7,884	9,292	19,823	18,524	17,729	15,805	14,345
TOTAL MEAN INCOME		9,232	25,071	34,402	41,523	44,466	45,015	43,527	41,952	38,562	31,058	33,903
Income Not Specified (Per cent of total persons at each age)		9.23	5.94	5.48	4.62	4.25	4.33	4.53	4.65	4.93	6.34	5.64
Age Structure*		0.15	0.13	0.12	0.12	0.10	0.09	0.08	0.08	0.08	0.06	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.4: Mean Income (in $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, Maori Males, 1981

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	16,468	23,947	28,909	31,816	33,176	33,893	32,852	31,637	30,452	34,416	28,260
	Secondary School Quals. Only	16,514	26,947	33,879	39,869	38,609	42,050	39,178	38,864	35,146	44,940	29,039
	Bachelors/Post-Graduate Quals.	...	26,716	38,909	46,986	58,985	68,136	65,582	64,424	66,889	78,653	50,778
	Other Tertiary Qualifications	19,095	29,562	35,090	38,471	40,268	42,790	43,038	43,611	39,915	47,001	36,503
	Qualifications Not Specified	16,888	23,995	29,753	33,085	34,581	34,725	33,165	32,814	30,772	35,681	29,805
PART-TIME	Still at School/No Qualifications	4,200	12,250	15,854	22,627	17,567	25,393	19,103	21,874	22,352	18,841	12,237
	Secondary School Quals. Only	4,642	15,177	23,115	23,235	22,408	24,649	28,010	5,882	1,008	29,579	10,255
	Bachelors/Post-Graduate Quals.	...	17,310	45,713	13,445	22,857	19,495	...	...	...	94,115	34,180
	Other Tertiary Qualifications	...	19,495	17,863	29,355	36,302	32,268	30,453	11,428	...	23,977	24,557
	Qualifications Not Specified	2,241	12,605	23,949	26,890	29,495	26,890	27,226	20,840	15,462	20,168	17,563
UNEMPLOYED	Still at School/No Qualifications	3,417	6,518	8,377	8,926	11,074	8,403	9,288	8,526	6,913	...	6,127
	Secondary School Quals. Only	3,710	8,768	10,535	14,637	14,309	19,122	11,764	7,395	7,395	...	7,679
	Bachelors/Post-Graduate Quals.	...	5,714	...	...	...	...	...	...	...	...	8,907
	Other Tertiary Qualifications	2,185	11,749	11,529	14,603	11,876	4,930	8,963	22,772	...	...	11,764
	Qualifications Not Specified	3,727	5,088	8,894	12,615	11,578	12,302	7,941	6,723	8,291	...	6,697
NOT IN THE LABOUR FORCE	Still at School/No Qualifications	493	5,794	7,653	8,579	10,094	8,929	9,310	9,330	9,153	10,557	4,177
	Secondary School Quals. Only	1,487	7,211	13,292	18,016	6,857	7,955	11,092	6,924	10,588	13,962	2,829
	Bachelors/Post-Graduate Quals.	...	5,826	5,322	15,798	27,226	...	...	...	...	24,201	9,222
	Other Tertiary Qualifications	...	7,171	17,815	121,005	4,034	16,302	21,960	8,963	10,840	17,665	18,412
	Qualifications Not Specified	2,553	6,410	6,903	13,231	11,480	9,109	10,252	7,808	10,903	9,139	7,648
TOTAL MEAN INCOME		9,295	22,391	28,539	32,110	32,987	33,916	32,027	30,106	27,689	22,827	24,429
Income Not Specified (Per cent of total persons at each age)		17.53	12.05	10.65	9.37	8.79	9.27	9.44	9.79	11.19	14.42	12.15
Age Structure*		0.25	0.19	0.14	0.11	0.08	0.07	0.06	0.05	0.03	0.02	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.5: Mean Income (in $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, European Females, 1986

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	12,045	17,714	19,068	19,032	19,716	20,186	20,092	19,940	20,185	22,992	18,916
	Secondary School Quals. Only	13,441	21,050	24,377	23,245	22,964	23,387	23,288	22,628	22,501	25,174	20,563
	Bachelors/Post-Graduate Quals.	17,341	22,889	31,672	34,502	34,603	36,533	37,153	38,233	39,070	43,144	32,256
	Other Tertiary Qualifications	14,705	22,432	26,291	25,505	25,239	26,164	27,259	27,142	27,074	28,914	24,649
	Qualifications Not Specified	12,430	17,398	18,552	18,833	19,616	19,655	19,370	20,144	19,327	22,568	19,080
PART-TIME	Still at School/No Qualifications	3,617	9,580	9,002	9,480	10,084	10,534	10,338	10,011	10,433	15,653	9,890
	Secondary School Quals. Only	4,042	10,149	9,997	10,345	11,393	11,863	12,159	12,027	11,987	16,988	10,089
	Bachelors/Post-Graduate Quals.	7,862	10,676	14,263	14,248	14,838	15,642	17,355	17,555	19,694	24,403	15,302
	Other Tertiary Qualifications	8,035	12,462	11,728	11,684	12,688	13,625	13,929	14,071	14,152	19,260	12,983
	Qualifications Not Specified	5,609	9,954	8,407	9,037	10,334	9,839	10,598	9,577	9,602	15,439	10,216
UNEMPLOYED	Still at School/No Qualifications	3,090	8,776	8,094	8,054	7,104	7,905	6,465	6,691	7,570	11,241	6,321
	Secondary School Quals. Only	2,917	8,026	7,623	7,104	7,384	7,395	7,263	6,722	7,056	11,446	5,514
	Bachelors/Post-Graduate Quals.	4,986	7,504	11,454	7,144	8,912	11,393	8,711	9,558	4,389	10,738	8,758
	Other Tertiary Qualifications	5,415	9,226	7,656	6,944	8,031	7,432	7,001	7,480	8,825	12,830	7,741
	Qualifications Not Specified	5,475	9,250	8,944	10,156	7,346	7,354	7,977	6,959	7,903	13,209	8,030
NOT IN THE LABOUR FORCE	Still at School/No Qualifications	1,339	7,946	6,903	6,975	6,999	6,484	5,742	5,741	7,244	11,695	7,178
	Secondary School Quals. Only	2,129	6,924	5,878	5,791	6,995	7,390	7,019	7,109	8,450	12,981	6,380
	Bachelors/Post-Graduate Quals.	10,355	7,430	8,587	6,870	7,516	9,245	8,998	9,870	13,651	20,145	9,465
	Other Tertiary Qualifications	5,629	7,895	6,586	6,304	7,207	8,163	8,115	8,403	9,791	14,681	8,741
	Qualifications Not Specified	4,118	7,148	7,197	6,766	7,594	6,346	6,368	6,960	7,966	11,920	9,195
TOTAL MEAN INCOME		7,182	16,990	16,166	14,231	15,502	16,691	16,355	14,608	12,822	14,028	14,355
Income Not Specified (Per cent of total persons at each age)		6.27	4.21	7.71	8.71	7.09	5.83	4.87	4.47	3.81	2.48	5.82
Age Structure*		0.13	0.13	0.12	0.12	0.12	0.09	0.08	0.07	0.07	0.07	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.6: Mean Income (in $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, Maori Females, 1986

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	11,799	15,823	16,738	17,149	17,842	18,258	18,333	18,155	17,735	18,971	16,355
	Secondary School Quals. Only	13,392	19,477	21,323	20,394	21,118	20,274	21,145	20,391	21,639	20,773	18,578
	Bachelors/Post-Graduate Quals.	34,515	23,620	30,024	33,240	37,343	28,616	31,759	42,459	29,721	49,855	30,151
	Other Tertiary Qualifications	13,770	20,552	23,807	23,601	23,819	25,262	27,236	28,038	27,882	26,965	22,622
	Qualifications Not Specified	12,183	15,607	17,016	16,754	17,218	18,935	18,436	17,940	16,346	21,332	16,956
PART-TIME	Still at School/No Qualifications	6,555	9,935	9,425	9,584	10,034	10,105	10,017	10,255	9,369	11,735	9,488
	Secondary School Quals. Only	5,504	10,473	9,677	11,124	11,336	12,285	10,879	8,974	11,034	11,505	9,574
	Bachelors/Post-Graduate Quals.	9,588	12,144	16,150	10,585	5,657	24,448	14,701	36,433	...	...	15,433
	Other Tertiary Qualifications	9,630	12,258	12,916	12,696	13,996	13,495	18,519	21,567	24,197	23,832	14,517
	Qualifications Not Specified	6,343	9,274	13,506	8,003	11,264	8,451	10,966	11,555	10,445	17,641	10,440
UNEMPLOYED	Still at School/No Qualifications	4,248	8,945	8,879	8,568	8,126	8,228	6,822	7,039	5,886	12,327	7,051
	Secondary School Quals. Only	3,699	8,700	8,149	8,649	8,230	6,520	6,807	9,715	3,452	...	6,547
	Bachelors/Post-Graduate Quals.	5,753	5,439	10,546	2,812	5,625	5,113	...	2,685	17,258	...	6,218
	Other Tertiary Qualifications	5,810	8,437	9,568	7,367	11,972	10,827	6,490	7,638	8,309	9,588	8,201
	Qualifications Not Specified	7,210	8,454	12,008	9,434	7,766	13,902	6,280	5,944	6,059	15,340	9,139
NOT IN THE LABOUR FORCE	Still at School/No Qualifications	3,705	8,892	8,562	8,697	8,152	7,119	6,528	6,765	7,459	9,969	7,403
	Secondary School Quals. Only	2,828	8,052	8,067	7,338	8,437	7,360	7,143	6,793	7,476	10,631	6,540
	Bachelors/Post-Graduate Quals.	...	11,198	10,578	3,579	16,107	18,536	...	9,588	9,588	8,565	10,167
	Other Tertiary Qualifications	6,959	8,737	8,099	8,257	8,615	9,079	7,451	7,442	7,338	12,761	8,461
	Qualifications Not Specified	6,069	8,624	7,324	7,972	7,788	7,585	7,101	7,187	7,480	9,883	7,864
TOTAL MEAN INCOME		7379	13092	12989	13154	14099	14289	14252	13155	11640	11516	12119
Income Not Specified (Per cent of total persons at each age)		17.73	13.35	13.72	13.93	12.33	12.06	13.05	12.89	13.75	11.08	14.10
Age Structure*		0.21	0.19	0.16	0.12	0.09	0.07	0.06	0.05	0.04	0.02	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.7: Mean Income (In $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, European Males, 1986

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	13,739	21,385	25,857	28,679	31,557	32,354	32,090	30,810	29,928	31,730	27,968
	Secondary School Quals. Only	14,054	23,381	30,359	34,621	38,990	40,013	38,686	36,776	35,609	35,395	29,302
	Bachelors/Post-Graduate Quals.	25,841	25,391	37,785	48,258	57,254	62,546	65,276	64,966	65,142	70,726	51,809
	Other Tertiary Qualifications	17,266	26,353	31,695	35,071	38,336	40,056	39,982	38,563	37,470	39,350	35,372
	Qualifications Not Specified	13,595	21,832	25,820	28,681	31,109	32,205	30,489	29,189	28,964	29,994	28,141
PART-TIME	Still at School/No Qualifications	3,830	19,505	23,348	26,299	26,754	26,642	26,486	24,899	23,806	23,059	18,265
	Secondary School Quals. Only	4,296	14,559	22,286	25,302	27,680	28,298	33,059	26,028	25,968	25,810	13,752
	Bachelors/Post-Graduate Quals.	9,588	11,046	19,559	27,977	28,032	36,540	42,746	41,759	39,242	41,788	28,917
	Other Tertiary Qualifications	15,066	20,155	24,588	26,428	29,211	29,622	30,676	29,731	27,162	26,129	26,702
	Qualifications Not Specified	8,948	15,279	24,568	26,608	23,616	29,469	29,079	26,270	23,786	23,416	23,512
UNEMPLOYED	Still at School/No Qualifications	3,493	10,703	11,883	13,619	14,549	13,756	14,352	13,525	13,355	13,655	8,845
	Secondary School Quals. Only	2,868	9,338	12,617	14,063	13,742	15,107	13,379	12,998	12,837	15,847	6,741
	Bachelors/Post-Graduate Quals.	3,068	7,436	11,016	13,852	14,981	23,394	13,806	19,005	22,840	22,836	11,866
	Other Tertiary Qualifications	7,977	12,699	14,844	15,776	17,536	17,178	17,397	17,318	15,007	17,210	15,150
	Qualifications Not Specified	5,399	10,262	12,272	14,381	9,834	9,647	12,685	12,943	12,256	12,053	10,535
NOT IN THE	Still at School/No Qualifications	925	9,185	10,077	10,830	11,761	12,176	13,227	14,115	15,997	15,333	9,174
LABOUR FORCE	Secondary School Quals. Only	2,245	8,267	11,987	13,320	14,670	15,673	15,257	17,723	19,377	17,880	7,398
	Bachelors/Post-Graduate Quals.	5,791	7,629	12,077	16,644	13,959	12,837	16,159	22,151	33,233	31,640	19,139
	Other Tertiary Qualifications	6,316	12,701	14,694	16,105	15,740	16,536	18,217	17,439	19,470	17,975	17,384
	Qualifications Not Specified	3,284	7,073	6,740	10,975	8,265	9,452	9,457	12,090	14,204	14,233	12,301
TOTAL MEAN INCOME		8,202	21,848	29,211	33,784	37,458	38,370	37,465	35,089	32,714	24,834	28,945
Income Not Specified (Per cent of total persons at each age)		4.91	1.74	1.87	2.11	2.13	2.26	2.12	1.93	1.86	1.92	2.38
Age Structure*		0.13	0.13	0.12	0.11	0.12	0.09	0.08	0.07	0.08	0.07	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.8: Mean Income (in $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, Maori Males, 1986

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	13,856	19,756	23,455	25,792	27,401	27,810	28,184	26,858	26,032	26,462	23,328
	Secondary School Quals. Only	14,639	22,346	27,606	30,960	33,538	31,031	30,305	29,654	30,451	31,740	24,631
	Bachelors/Post-Graduate Quals.	21,093	25,392	32,766	41,432	46,849	49,942	58,231	54,910	51,389	54,649	41,361
	Other Tertiary Qualifications	16,109	24,227	29,637	31,766	33,121	33,042	33,503	33,259	32,440	31,713	29,725
	Qualifications Not Specified	13,335	19,838	22,696	26,015	27,584	27,101	28,177	25,475	24,730	25,740	23,932
PART-TIME	Still at School/No Qualifications	8,875	18,355	20,800	23,176	26,216	24,113	25,350	22,460	21,909	21,348	19,742
	Secondary School Quals. Only	6,825	17,698	23,365	25,333	27,267	24,928	28,346	25,886	23,234	27,484	17,105
	Bachelors/Post-Graduate Quals.	...	12,144	25,749	17,258	46,020	31,639	21,093	...	46,020	31,639	28,096
	Other Tertiary Qualifications	14,259	20,130	25,909	25,668	30,812	33,001	31,324	26,717	23,308	21,412	25,752
	Qualifications Not Specified	8,585	20,709	24,501	24,075	22,627	25,503	27,583	18,644	22,736	19,175	21,247
UNEMPLOYED	Still at School/No Qualifications	4,588	9,514	11,000	12,360	12,171	12,308	11,512	10,154	10,925	13,275	8,383
	Secondary School Quals. Only	3,246	10,503	11,188	13,276	13,423	11,478	12,442	11,718	9,886	14,381	7,484
	Bachelors/Post-Graduate Quals.	...	5,465	8,744	12,809	...	24,928	...	...	...	5,753	9,108
	Other Tertiary Qualifications	6,577	12,294	11,854	14,069	20,326	14,837	12,202	15,580	10,674	8,309	12,589
	Qualifications Not Specified	4,722	9,076	10,117	11,409	10,653	9,108	8,766	11,185	10,882	13,423	8,355
NOT IN THE LABOUR FORCE	Still at School/No Qualifications	1,777	8,635	10,177	11,210	12,102	12,181	11,658	11,690	11,749	10,987	6,958
	Secondary School Quals. Only	1,875	9,125	13,592	12,450	18,696	13,098	17,194	9,989	10,799	13,033	5,435
	Bachelors/Post-Graduate Quals.	...	7,013	35,474	19,175	9,588	15,340	...	11,984	...	26,462	14,818
	Other Tertiary Qualifications	9,103	12,531	12,074	16,299	17,897	17,790	10,719	12,345	14,834	15,197	14,091
	Qualifications Not Specified	2,544	7,586	5,333	7,854	10,839	7,008	10,505	14,856	11,052	11,058	8,814
TOTAL MEAN INCOME		8,658	18,940	23,642	26,302	28,135	27,687	27,876	25,701	23,891	17,520	21,073
Income Not Specified (Per cent of total persons at each age)		14.19	6.45	4.77	4.40	3.59	4.21	4.42	4.98	6.54	6.03	6.98
Age Structure*		0.21	0.19	0.15	0.12	0.09	0.07	0.06	0.05	0.04	0.02	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.9: Mean Income (in $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, European Females, 1991

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	11,312	16,840	18,732	19,161	19,740	20,499	20,517	19,686	19,491	21,293	19,412
	Secondary School Quals. Only	12,117	20,353	24,735	24,976	23,962	24,366	23,977	23,269	22,256	23,114	21,865
	Bachelors/Post-Graduate Quals.	13,300	21,385	33,155	38,814	39,420	39,876	40,057	39,666	39,542	42,372	35,364
	Other Tertiary Qualifications	12,757	20,487	26,147	26,972	26,480	26,896	27,414	26,904	26,810	27,102	24,925
	Qualifications Not Specified	11,005	16,739	18,928	17,883	19,393	19,502	19,899	19,713	18,449	21,839	19,017
PART-TIME	Still at School/No Qualifications	2,802	9,763	10,062	10,126	10,607	11,047	10,869	10,717	10,382	14,647	10,397
	Secondary School Quals. Only	3,398	9,945	11,467	11,664	12,347	12,896	13,137	12,970	12,792	16,357	10,359
	Bachelors/Post-Graduate Quals.	4,528	9,446	15,990	16,712	17,584	18,174	18,453	19,884	20,406	24,506	17,162
	Other Tertiary Qualifications	6,501	11,345	12,563	12,792	13,429	14,310	14,709	14,751	14,715	18,252	13,594
	Qualifications Not Specified	2,906	7,214	11,217	11,446	9,961	11,417	10,853	10,163	10,359	14,177	10,751
UNEMPLOYED	Still at School/No Qualifications	3,804	8,781	9,417	9,924	9,758	9,527	8,671	8,116	8,524	9,833	8,051
	Secondary School Quals. Only	3,055	8,638	9,934	10,155	10,215	10,744	9,463	8,641	8,126	9,348	6,928
	Bachelors/Post-Graduate Quals.	5,575	7,767	12,290	12,689	11,906	10,938	12,449	20,910	12,847	12,750	10,711
	Other Tertiary Qualifications	5,460	8,937	10,217	10,274	10,130	10,695	10,241	8,369	9,309	11,760	9,013
	Qualifications Not Specified	4,793	8,556	8,125	10,567	12,066	9,820	6,163	8,515	9,115	7,250	8,376
NOT IN THE LABOUR FORCE	Still at School/No Qualifications	1,800	9,547	9,255	8,984	8,757	8,041	6,890	6,513	7,471	10,611	7,837
	Secondary School Quals. Only	1,965	8,325	8,309	7,891	8,125	8,566	8,272	7,937	8,329	11,681	6,808
	Bachelors/Post-Graduate Quals.	3,780	7,842	11,343	9,516	8,850	10,636	11,464	12,403	12,760	20,286	10,872
	Other Tertiary Qualifications	5,333	8,915	9,439	8,330	8,744	9,869	10,077	9,314	9,742	13,636	9,764
	Qualifications Not Specified	2,327	9,351	10,236	9,579	9,360	7,815	7,723	7,201	7,706	10,303	8,757
TOTAL MEAN INCOME		5,052	15,448	17,921	16,466	17,246	18,650	18,229	16,042	13,301	13,167	15,213
Income Not Specified (Per cent of total persons at each age)		7.04	3.55	7.06	8.88	6.95	5.24	3.93	3.09	2.73	1.61	5.39
Age Structure*		0.12	0.11	0.12	0.12	0.11	0.11	0.09	0.08	0.07	0.07	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.10: Mean Income (in $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, Maori Females, 1991

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	11,001	15,222	16,634	17,376	17,556	18,037	18,307	17,304	17,266	16,917	16,854
	Secondary School Quals. Only	12,617	19,495	22,396	22,483	22,632	22,113	20,927	20,582	18,156	18,864	19,959
	Bachelors/Post-Graduate Quals.	9,375	21,670	31,895	36,223	37,851	36,316	41,333	37,434	46,667	45,000	33,386
	Other Tertiary Qualifications	12,341	19,096	22,828	23,933	24,029	24,582	25,164	27,064	27,263	23,066	22,234
	Qualifications Not Specified	11,737	16,819	20,077	17,514	19,795	16,837	16,475	17,680	16,837	19,806	17,357
PART-TIME	Still at School/No Qualifications	4,949	10,230	10,351	10,122	9,910	10,610	10,095	10,177	10,670	11,331	9,845
	Secondary School Quals. Only	4,190	10,523	11,105	11,461	12,683	11,244	14,564	9,875	10,277	15,850	9,353
	Bachelors/Post-Graduate Quals.	0	11,771	18,825	13,750	20,673	17,400	12,083	17,150	...	...	15,463
	Other Tertiary Qualifications	7,265	11,177	12,104	12,682	15,083	14,385	13,806	14,918	17,074	19,076	13,105
	Qualifications Not Specified	5,000	6,650	11,386	11,363	9,691	11,411	10,711	8,214	15,275	10,667	10,496
UNEMPLOYED	Still at School/No Qualifications	4,832	9,219	9,771	10,085	9,704	9,018	7,569	6,886	7,045	11,125	8,413
	Secondary School Quals. Only	3,785	9,160	9,836	10,703	11,095	9,027	9,548	8,847	9,333	6,250	7,479
	Bachelors/Post-Graduate Quals.	5,000	8,950	7,688	9,550	16,083	14,400	11,875	...	...	...	9,733
	Other Tertiary Qualifications	5,690	9,016	9,813	11,342	9,678	9,389	10,660	8,280	8,318	12,750	8,684
	Qualifications Not Specified	4,734	7,205	9,138	9,039	10,000	9,727	7,607	10,400	9,000	...	8,228
NOT IN THE	Still at School/No Qualifications	3,908	10,131	10,135	10,087	9,679	8,938	7,485	7,589	7,621	8,916	8,426
LABOUR FORCE	Secondary School Quals. Only	2,553	9,792	10,255	10,203	10,490	9,442	8,629	7,969	7,430	8,797	7,130
	Bachelors/Post-Graduate Quals.	3,825	8,036	13,440	10,464	12,422	10,393	13,458	8,786	5,688	12,750	10,081
	Other Tertiary Qualifications	6,398	9,977	10,091	10,324	9,885	10,689	8,981	8,784	7,750	10,453	9,431
	Qualifications Not Specified	4,653	10,227	9,556	9,805	10,000	8,569	8,010	7,708	7,765	8,910	8,597
TOTAL MEAN INCOME		5,254	12,476	13,285	13,737	14,602	14,687	13,869	12,869	11,275	10,236	11,894
Income Not Specified (Per cent of total persons at each age)		16.36	7.63	9.86	10.23	9.42	9.95	9.18	8.40	7.82	6.94	10.43
Age Structure*		0.18	0.17	0.16	0.14	0.10	0.08	0.06	0.05	0.04	0.03	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.11: Mean Income (in $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, European Males, 1991

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	12,353	19,160	23,709	26,833	28,723	30,635	30,438	29,233	27,681	27,759	26,957
	Secondary School Quals. Only	12,390	21,159	29,179	34,006	37,331	40,140	39,745	37,265	32,918	32,283	30,266
	Bachelors/Post-Graduate Quals.	20,013	23,717	39,204	52,432	58,252	62,413	63,819	64,917	63,784	64,754	54,107
	Other Tertiary Qualifications	13,478	22,908	29,960	34,123	36,645	38,699	38,962	37,369	35,202	35,530	33,712
	Qualifications Not Specified	12,407	18,424	23,730	26,105	28,819	28,963	28,999	28,832	26,331	26,900	26,315
PART-TIME	Still at School/No Qualifications	2,656	14,198	17,825	19,785	19,140	21,005	21,600	21,029	18,878	18,889	15,142
	Secondary School Quals. Only	3,425	11,370	18,785	20,718	22,557	23,459	25,835	27,576	22,364	21,723	10,285
	Bachelors/Post-Graduate Quals.	5,861	9,827	18,651	30,279	32,065	31,114	33,833	36,261	37,684	40,617	28,009
	Other Tertiary Qualifications	7,050	13,691	19,391	22,660	22,793	23,582	24,184	24,670	22,975	24,267	21,431
	Qualifications Not Specified	3,315	12,932	14,341	24,727	17,438	17,542	14,341	19,553	16,328	18,221	15,189
UNEMPLOYED	Still at School/No Qualifications	4,299	8,379	9,852	10,758	11,408	11,709	11,064	10,419	10,940	11,695	9,132
	Secondary School Quals. Only	3,276	8,782	11,057	13,333	14,548	15,910	15,782	12,589	12,109	12,902	8,388
	Bachelors/Post-Graduate Quals.	7,583	7,891	12,577	17,138	21,111	23,541	24,387	21,245	19,607	28,000	14,396
	Other Tertiary Qualifications	5,672	10,014	12,156	13,987	15,017	15,176	15,942	14,099	12,989	13,818	12,416
	Qualifications Not Specified	4,494	8,356	10,230	9,789	11,135	11,250	9,120	11,167	9,071	14,375	9,123
NOT IN THE LABOUR FORCE	Still at School/No Qualifications	1,323	8,419	9,486	10,658	11,534	11,292	11,588	11,931	11,917	12,346	8,757
	Secondary School Quals. Only	1,899	8,030	12,113	13,443	14,775	16,319	16,366	15,915	16,821	15,231	6,650
	Bachelors/Post-Graduate Quals.	5,276	8,019	12,682	17,897	23,733	24,849	21,602	26,299	29,770	29,551	18,532
	Other Tertiary Qualifications	4,935	10,622	14,051	16,029	16,001	16,623	16,007	16,539	15,499	15,381	14,583
	Qualifications Not Specified	2,748	7,867	10,556	9,197	9,815	13,413	12,219	11,769	11,842	11,456	10,118
TOTAL MEAN INCOME		5,553	17,727	26,227	31,853	34,937	36,768	35,853	33,073	28,238	20,797	26,819
Income Not Specified (Per cent of total persons at each age)		5.97	2.02	1.78	1.76	1.70	1.69	1.63	1.55	1.41	1.47	2.21
Age Structure*		0.12	0.12	0.11	0.12	0.11	0.11	0.09	0.08	0.07	0.07	1.00

(continued over)

APPENDIX H.8 (continued)

H.8.12: Mean Income (in $1991), by Labour Force Status, Highest Qualification and Age, Population Aged 15-64 Years, Maori Males, 1991

Labour Force Status and Highest Qualification		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	TOTAL
FULL-TIME	Still at School/No Qualifications	12,310	17,597	21,499	23,830	25,958	26,527	25,984	25,310	23,763	20,838	22,826
	Secondary School Quals. Only	12,564	19,972	26,248	29,369	31,427	31,776	30,691	28,717	26,598	24,300	24,344
	Bachelors/Post-Graduate Quals.	26,000	26,167	35,074	44,373	49,017	54,846	55,075	64,412	59,111	61,250	45,404
	Other Tertiary Qualifications	13,120	20,300	26,115	30,262	30,926	32,052	30,995	31,726	29,032	28,627	27,387
	Qualifications Not Specified	10,176	17,189	20,719	25,063	25,367	27,046	25,682	25,679	23,438	19,646	22,818
PART-TIME	Still at School/No Qualifications	4,817	13,440	16,595	17,135	18,653	18,935	23,128	17,350	18,407	16,547	15,472
	Secondary School Quals. Only	4,146	13,178	17,906	18,195	17,490	22,859	22,917	23,578	18,250	13,844	10,504
	Bachelors/Post-Graduate Quals.	5,250	11,841	23,667	30,000	31,875	34,167	23,125	60,000	66,667	40,000	26,164
	Other Tertiary Qualifications	8,035	12,988	16,612	21,306	24,239	19,994	19,409	19,528	20,167	22,521	17,954
	Qualifications Not Specified	8,531	9,321	13,475	19,167	16,042	13,800	17,500	19,643	9,500	...	13,789
UNEMPLOYED	Still at School/No Qualifications	4,623	7,578	8,915	9,443	10,205	9,071	9,581	9,035	8,776	8,292	8,009
	Secondary School Quals. Only	3,975	8,088	10,022	10,628	11,618	12,000	9,580	8,683	11,325	6,917	7,603
	Bachelors/Post-Graduate Quals.	3,929	8,000	9,167	14,313	8,313	24,563	60,000	9,000	1,250	6,250	10,398
	Other Tertiary Qualifications	5,960	8,177	10,342	10,993	11,783	11,755	11,528	10,516	8,560	15,188	9,518
	Qualifications Not Specified	4,647	7,993	8,212	10,714	8,617	10,269	11,344	8,897	9,321	3,125	8,263
NOT IN THE LABOUR FORCE	Still at School/No Qualifications	2,437	7,494	8,658	9,967	10,569	10,797	10,101	9,268	8,879	9,541	7,302
	Secondary School Quals. Only	1,809	8,623	10,577	10,962	13,639	12,550	11,113	10,736	9,721	9,952	5,258
	Bachelors/Post-Graduate Quals.	2,708	7,517	9,738	19,850	26,417	8,250	12,750	16,000	6,250	16,906	12,277
	Other Tertiary Qualifications	5,205	9,215	10,935	12,366	13,261	13,362	15,789	12,116	11,054	11,262	10,712
	Qualifications Not Specified	3,951	8,027	9,444	8,783	10,242	9,269	12,719	8,591	10,276	8,931	8,373
TOTAL MEAN INCOME		5,230	13,640	18,095	21,240	23,173	23,925	22,958	21,382	17,990	13,084	16,786
Income Not Specified (Per cent of total persons at each age)		15.20	6.23	4.74	4.33	4.09	3.62	3.88	4.62	5.33	5.06	6.82
Age Structure*		0.19	0.17	0.15	0.13	0.10	0.08	0.06	0.05	0.04	0.03	1.00

Notes: ... = No cases, or nil income declared

*Excludes Qualifications Not Specified.

Source: Database B

APPENDIX I

APPENDIX I.1

Cohort Size at Age 20-24, Percentage of 20-24 Year Olds in Employment (Employment to Population Ratio), and Percentage of 20-24 Year Olds in Employment Within the Labour Force, by Sex and Cohort, 1945-1991

Year of Observation and Year of Birth of Cohort	MALES		
	Number Aged 20-24 Years	Employment as Percentage of Population*	Labour Force*
1945 (Born 1921-25)	50223		
1951 (Born 1927-31)	71716	93.28	98.65
1956 (Born 1932-36)	69180	94.81	98.77
1961 (Born 1937-41)	80043		
1966 (Born 1942-46)	97394	92.79	99.15
1971 (Born 1947-51)	119447		
1976 (Born 1952-56)	131644	89.81	97.17
1981 (Born 1957-61)	137424	88.01	93.62
1986 (Born 1962-66)	143052	87.42	92.05
1991 (Born 1967-71)	135978	69.35	81.94

Year of Observation and Year of Birth of Cohort	FEMALES		
	Number Aged 20-24 Years	Employment as Percentage of Population*	Labour Force*
1945 (Born 1921-25)	70718		
1951 (Born 1927-31)	68957	52.38	98.66
1956 (Born 1932-36)	66491	49.73	98.34
1961 (Born 1937-41)	78020		
1966 (Born 1942-46)	93258	51.72	97.79
1971 (Born 1947-51)	115512		
1976 (Born 1952-56)	127931	58.07	96.28
1981 (Born 1957-61)	132219	62.08	93.16
1986 (Born 1962-66)	139842	67.49	89.64
1991 (Born 1967-71)	135117	58.94	83.22

Notes: *at 20-24 Years of age.

Source: *Census of Population and Dwellings,* various years

APPENDIX I.2

Cohort Size at Age 20-24, and Mean Income at Age 20-24 as a Percentage of Mean Income of Males Aged 25-54, by Sex and Cohort, 1945-1991

Year of Observation and Year of Birth of Cohort	MALES		
	Number Aged 20-24 Years	Income Relative to 25-54 Year Old Males	
		Market Income	Total Income
1945 (Born 1921-25)	50223	64.9	
1951 (Born 1927-31)	71716	63.4	
1956 (Born 1932-36)	69180	62.7	
1961 (Born 1937-41)	80043	64.7	
1966 (Born 1942-46)	97394	73.7	
1971 (Born 1947-51)	119447	80.3	
1976 (Born 1952-56)	131644	69.7	
1981 (Born 1957-61)	137424	59.9	60.2
1986 (Born 1962-66)	143052	61.8	62.1
1991 (Born 1967-71)	135978	54.7	55

Year of Observation and Year of Birth of Cohort	FEMALES		
	Number Aged 20-24 Years	Income Relative to 25-54 Year Old Males	
		Market Income	Total Income
1945 (Born 1921-25)	70718	48.5	
1951 (Born 1927-31)	68957	36.4	
1956 (Born 1932-36)	66491	35.2	
1961 (Born 1937-41)	78020	35.7	
1966 (Born 1942-46)	93258	40.7	
1971 (Born 1947-51)	115512	45.0	
1976 (Born 1952-56)	127931	55.1	
1981 (Born 1957-61)	132219	65.6	68.8
1986 (Born 1962-66)	139842	72.8	76.5
1991 (Born 1967-71)	135117	83.5	87.6

Notes: Market Income = Income excluding Income Support;
Total Income = Income including Income Support

Source: Population data: *Census of Population and Dwellings*, various years
Income: Easton 1997b, Tables A.4 and A.6

APPENDIX I.3

Cohort Size at Age 20-24 (Males and Females Separately) and Age At Which Each Female Cohort Experienced Peak Childbearing, by Cohort, 1945-1986

Year of Observation/ Year of Birth of Cohort	Number at Age 20-24		Age at Peak ASFR
	Males	Females	
1945 (Born 1921-25)	50223	70718	26
1951 (Born 1927-31)	71716	68957	25
1956 (Born 1932-36)	69180	66491	24
1961 (Born 1937-41)	80043	78020	23
1966 (Born 1942-46)	97394	93258	23
1971 (Born 1947-51)	119447	115512	23
1976 (Born 1952-56)	131644	127931	24
1981 (Born 1957-61)	137424	132219	26
1986 (Born 1962-66)	143052	139842	27
1991 (Born 1967-71)	135978	135117	...

Source: Population data: *Census of Population and Dwellings*, various years.
Fertility data: Cheung, Jackson and Pool 1994

APPENDIX I.4

Cohort Size of Maori and Non-Maori/European, and Ratio of Maori to Non-Maori/ European, by Ethnic Classification, Year When Cohort Aged 20-24 Years, and Year of Birth of Cohort, Males and Females Combined, 1945-1991

Year of Observation/	Maori		Non-Maori		Ratio Maori:Non-Maori	
Year of Birth of Cohort	(a)	(b)	(a)	(b)	(a)	(b)
1945 (Born 1921-25)	7981	...	112960	...	0.07	...
1951 (Born 1927-31)	10384	...	130289	...	0.08	...
1956 (Born 1932-36)	11972	...	123699	...	0.10	...
1961 (Born 1937-41)	14288	...	143775	...	0.10	...
1966 (Born 1942-46)	14947	...	175705	...	0.09	...
1971 (Born 1947-51)	18476	...	216483	...	0.09	...
1976 (Born 1952-56)	24235	32187	235340	207888	0.10	0.15
1981 (Born 1957-61)	28566	39654	241077	212379	0.12	0.19
1986 (Born 1962-66)	34374	44388	248520	217002	0.14	0.20
1991 (Born 1967-71)	33501	42864	237594	201183	0.14	0.21

Notes: *(a) Sole/Single Origin Maori and Non-Maori
(b) Maori Ethnic Group and European
Non-Maori = Total population minus specified Maori classification.

Source: (a) *Census of Population and Dwellings,* various years
(b) Database B

APPENDIX I.5

Cohort Size at Age 20-24, Percentage of 20-24 Year Olds in Employment (Employment to Population Ratio), Percentage of 20-24 Year Olds in Employment Within the Labour Force, by Sex, Ethnic Classification* and Cohort, 1951 and 1976-1991

Year of Observation and Year of Birth of Cohort	MALES		
	Number Aged 20-24 Years	Employment as Percentage of Labour Force	Population
NON-MAORI/EUROPEAN			
1951 (Born 1927-31)	66508	98.76	94.82
1976 (Born 1952-56)	105339	97.79	88.65
1981 (Born 1957-61)	108924	95.18	87.70
1986 (Born 1962-66)	110409	93.69	86.22
1991 (Born 1967-71)	102189	85.04	71.69
MAORI			
1951 (Born 1927-31)	5208	97.24	90.57
1976 (Born 1952-56)	15966	94.65	87.75
1981 (Born 1957-61)	19467	87.18	83.94
1986 (Born 1962-66)	21975	85.24	77.57
1991 (Born 1967-71)	20802	68.57	50.30

Year of Observation and Year of Birth of Cohort	FEMALES		
	Number Aged 20-24 Years	Employment as Percentage of Labour Force	Population
NON-MAORI/EUROPEAN			
1951 (Born 1927-31)	63781	98.73	53.58
1976 (Born 1952-56)	102549	97.30	62.73
1981 (Born 1957-61)	103455	94.90	67.83
1986 (Born 1962-66)	106593	91.94	72.23
1991 (Born 1967-71)	98994	86.37	64.20
MAORI			
1951 (Born 1927-31)	5176	97.30	31.99
1976 (Born 1952-56)	16221	91.53	41.15
1981 (Born 1957-61)	20187	85.60	42.77
1986 (Born 1962-66)	22413	77.01	45.86
1991 (Born 1967-71)	22062	67.45	34.72

Notes: *1951 = Sole/Single Origin Maori and Non-Maori;
*1976-1991 = Maori Ethnic Group and European

Source: 1951: *Census of Population and Dwellings*
1976-1991: Database B

APPENDIX I.6

Ratios of Proportion of Maori to European in Employment Within the Labour Force in Each Age group, by Sex, Cohort and Age, 1976-1991

	Year of Birth of Cohort							
	1967-71	1962-66	1957-61	1952-56	1947-51	1942-46	1937-41	1932-36
				MALES				
15-19	0.86	0.83	0.92					
20-24	0.81	0.91	0.92	0.97				
25-29		0.82	0.93	0.94	0.98			
30-34			0.85	0.95	0.95	0.98		
35-39				0.88	0.96	0.96	0.98	
40-44					0.90	0.96	0.96	0.99
45-49						0.90	0.97	0.96
50-54							0.91	0.96
								0.92
				FEMALES				
15-19	0.84	0.74	0.84					
20-24	0.78	0.84	0.90	0.94				
25-29		0.79	0.87	0.95	0.97			
30-34			0.84	0.91	0.97	0.99		
35-39				0.89	0.94	0.98	0.99	
40-44					0.91	0.95	0.98	1.00
45-49						0.92	0.95	0.99
50-54							0.94	0.96
55-59								0.96

Source: Database B (see Appendix E)

APPENDIX I.7

Cohort Size at Age 20-24, Mean Total Income of 20-24 Year Olds, and Mean Total Income of 20-24 Year Olds in Full-Time Employment, By Sex, Ethnic Classification, and Cohort, 1951 and 1976-1991

Ethnic Classification, Year of Observation and Year of Birth	NON-MAORI/EUROPEAN					
	MALES			FEMALES		
	Mean Income*		Number at	Mean Income*		Number at
	Total	Full-Time	20-24 Years	Total	Full-Time	20-24 Years
1951 (Born 1927-31)			66508			63781
1976 (Born 1952-56)			105339			102549
1981 (Born 1957-61)	25,071	27,676	108924	17,314	23,897	103455
1986 (Born 1962-66)	21,848	24,030	110409	16,990	21,127	106593
1991 (Born 1967-71)	17,727	21,679	102189	15,448	20,132	98994

Ethnic Classification, Year of Observation and Year of Birth	MAORI					
	MALES			FEMALES		
	Income ($1991)		Number at	Income ($1991)		Number at
	Total	Full-Time	20-24 Years	Total	Full-Time	20-24 Years
1951 (Born 1927-31)			5208			5176
1976 (Born 1952-56)			15966			16221
1981 (Born 1957-61)	22,391	25,348	19467	11,042	20,858	20187
1986 (Born 1962-66)	18,940	21,455	21975	13,092	17,847	22413
1991 (Born 1967-71)	13,640	19,321	20802	12,476	17,729	22062

Notes: 1951 = Sole Maori and Non-Maori;
1976-1991 = Maori Ethnic Group and European.

Source: 1951: *Census of Population and Dwellings*;
1976-1991, Database B

APPENDIX I.8.1

Mean Income ($1991) for Population in Full-Time Employment, By Sex, Ethnicity and Age, 1981-1991

	MALES			FEMALES		
	1981	1986	1991	1981	1986	1991
EUROPEAN						
15-19	16,269	14,218	12,647	14,712	13,330	12,210
20-24	27,676	24,030	21,679	23,897	21,127	20,132
25-29	35,887	30,677	29,643	27,877	25,145	25,870
30-34	42,625	35,090	35,127	27,499	24,131	26,770
35-39	45,473	38,709	38,182	27,006	23,240	25,647
40-44	45,999	39,567	39,860	26,688	23,522	25,343
45-49	44,673	38,709	38,929	26,401	23,596	25,080
50-54	43,497	36,733	36,715	26,188	23,281	24,110
55-59	41,490	35,513	33,886	26,077	23,279	23,627
60-64	46,547	37,804	34,485	32,071	25,965	25,027
Total	38,485	32,973	33,331	24,428	22,018	23,651
MAORI ETHNIC GROUP						
15-19	16,564	14,242	12,576	14,223	12,618	12,087
20-24	25,348	21,455	19,321	20,858	17,847	17,729
25-29	30,985	26,056	24,620	22,713	19,029	19,890
30-34	34,171	28,662	27,764	22,195	18,692	19,998
35-39	35,090	30,123	29,371	23,013	19,099	20,087
40-44	36,076	29,794	29,922	23,652	19,501	20,037
45-49	34,633	30,107	28,800	23,285	20,143	19,696
50-54	33,383	28,809	28,438	23,492	20,289	20,081
55-59	31,761	27,862	26,116	22,847	19,956	19,992
60-64	36,804	28,291	24,250	31,485	20,468	19,239
Total	29,597	25,258	25,158	20,792	17,817	18,815

Source: Database B

APPENDIX I.8.2

Maori Ethnic Group Mean Income as Percentage of European Mean Income for those in Full-Time Employment, By Sex, Cohort and Age, 1981-1991

	Year of Birth of Cohort							
	1967-71	1962-66	1957-61	1952-56	1947-51	1942-46	1937-41	1932-36
				MALES				
15-19	100.16	101.82						
20-24	89.12	89.28	91.59					
25-29		83.05	84.94	86.34				
30-34			79.04	81.68	80.17			
35-39				76.93	77.82	77.17		
40-44					75.07	75.30	78.43	
45-49						73.98	77.78	77.52
50-54							77.46	78.43
55-59								77.07
				FEMALES				
15-19	100.16	101.82						
20-24	89.12	89.28	91.59					
25-29		83.05	84.94	86.34				
30-34			79.04	81.68	80.17			
35-39				76.93	77.82	77.17		
40-44					75.07	75.30	78.43	
45-49						73.98	77.78	77.52
50-54							77.46	78.43
55-59								77.07

Source: Database B (see Appendix I.8.1.)

APPENDIX I.9.1

I.9.1.1:

Age-Specific Fertility Ratios: Births Per Woman, By Ethnic Classification of Birth and Single Year of Age of Mother, Sole/Single Origin Maori, 1961-1993

Age of Mother	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
11	0.00000	0.00000	0.00000	0.00037	0.00000	0.00033	0.00000	0.00031	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
12	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00067	0.00032	0.00031	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00027	0.00000
13	0.00324	0.00218	0.00127	0.00163	0.00077	0.00150	0.00215	0.00034	0.00226	0.00123	0.00088	0.00056	0.00053	0.00050	0.00149	0.00155	0.00080	0.00186
14	0.00291	0.00415	0.00611	0.00299	0.00617	0.00543	0.00526	0.00325	0.00642	0.00613	0.00460	0.00556	0.00447	0.00833	0.00714	0.00323	0.00568	0.00373
15	0.01237	0.01311	0.01567	0.01765	0.01504	0.01322	0.01206	0.01591	0.01232	0.01695	0.01871	0.01743	0.01983	0.02257	0.02438	0.02290	0.01926	0.01990
16	0.03563	0.05333	0.04928	0.04683	0.05550	0.05378	0.04542	0.04863	0.04695	0.05758	0.06364	0.06174	0.06086	0.07492	0.06696	0.06192	0.05980	0.05111
17	0.12484	0.11207	0.11392	0.11495	0.12500	0.13816	0.11704	0.10630	0.10873	0.14234	0.14643	0.12702	0.12258	0.11230	0.12428	0.10178	0.11547	0.10281
18	0.21879	0.21911	0.21379	0.22363	0.24309	0.21632	0.22341	0.21403	0.19404	0.20723	0.24034	0.20956	0.20282	0.19094	0.16007	0.17346	0.14521	0.15056
19	0.30203	0.31812	0.29295	0.28988	0.31314	0.33933	0.31818	0.30148	0.27880	0.27580	0.26923	0.26797	0.23992	0.23011	0.21021	0.20408	0.19180	0.17364
20	0.32237	0.35608	0.37584	0.34295	0.32470	0.36686	0.36971	0.34865	0.34700	0.33558	0.29384	0.26697	0.26391	0.24106	0.22444	0.24409	0.20102	0.18911
21	0.33935	0.36623	0.39456	0.36133	0.35796	0.34451	0.36746	0.36221	0.32418	0.35578	0.31546	0.26762	0.24064	0.23057	0.22439	0.23410	0.20755	0.17406
22	0.39333	0.39351	0.37682	0.36081	0.36400	0.33290	0.35652	0.35542	0.34497	0.32473	0.28557	0.26860	0.22095	0.21584	0.20517	0.21399	0.18764	0.19281
23	0.36525	0.40533	0.36275	0.36622	0.33379	0.34122	0.35033	0.33774	0.35671	0.34035	0.29459	0.26318	0.22039	0.22085	0.18468	0.19000	0.19835	0.19655
24	0.37111	0.34286	0.35267	0.33533	0.34653	0.33217	0.32585	0.29603	0.33101	0.30655	0.24318	0.23081	0.21608	0.18883	0.16825	0.17252	0.17870	0.16955
25	0.32370	0.36815	0.35000	0.31126	0.31733	0.32867	0.31831	0.30890	0.29404	0.25949	0.26765	0.23125	0.20162	0.17750	0.18786	0.17714	0.15273	0.15502
26	0.30758	0.32074	0.30597	0.30935	0.29060	0.28121	0.32057	0.29714	0.26690	0.27133	0.23797	0.20765	0.19096	0.17838	0.15980	0.16146	0.15096	0.14480
27	0.29040	0.28712	0.26567	0.29023	0.25620	0.26803	0.23673	0.27770	0.25108	0.22937	0.22886	0.18679	0.17059	0.15819	0.14919	0.13618	0.13024	0.14163
28	0.28264	0.29516	0.26970	0.23852	0.24887	0.26222	0.25379	0.24552	0.24245	0.24783	0.19366	0.16779	0.14650	0.13647	0.13729	0.12623	0.11574	0.10537
29	0.25203	0.27851	0.23226	0.25597	0.22647	0.24545	0.21791	0.23750	0.23931	0.19301	0.18662	0.17183	0.14000	0.12313	0.11404	0.12386	0.10275	0.10051
30	0.23500	0.23902	0.20661	0.21210	0.21278	0.21259	0.22443	0.21429	0.20972	0.19533	0.14324	0.15070	0.12168	0.11258	0.09689	0.09017	0.08994	0.08901
31	0.21624	0.19500	0.18455	0.15789	0.16325	0.15758	0.18881	0.18837	0.16260	0.16458	0.14200	0.11429	0.11056	0.09051	0.10828	0.08634	0.06879	0.07403
32	0.25701	0.24017	0.18017	0.19328	0.17248	0.19397	0.14809	0.16288	0.14922	0.19055	0.12857	0.10667	0.10340	0.08873	0.06691	0.08138	0.06813	0.06494
33	0.20417	0.20841	0.17414	0.16581	0.14914	0.15093	0.15478	0.14538	0.13435	0.13953	0.12923	0.11064	0.09267	0.06552	0.08201	0.05074	0.05793	0.05776
34	0.20753	0.18750	0.20935	0.16522	0.14870	0.13652	0.15047	0.13363	0.15659	0.12063	0.10800	0.11615	0.08511	0.07143	0.06950	0.07609	0.05259	0.05724
35	0.14022	0.17312	0.16042	0.16296	0.12609	0.13158	0.12105	0.12830	0.12500	0.11732	0.10480	0.08800	0.08321	0.06475	0.05556	0.04604	0.05324	0.04444
36	0.17111	0.15109	0.15161	0.14896	0.11204	0.12522	0.11504	0.12478	0.11509	0.11858	0.08672	0.08468	0.05726	0.05115	0.04357	0.03803	0.03500	0.04173
37	0.13929	0.14157	0.12609	0.12857	0.13085	0.12870	0.10708	0.09643	0.09643	0.08571	0.06446	0.06535	0.06748	0.05000	0.03516	0.03453	0.03451	0.03022
38	0.14868	0.13855	0.12584	0.10000	0.11474	0.10968	0.09533	0.10536	0.08288	0.08378	0.06518	0.05083	0.04567	0.03409	0.04109	0.03047	0.02920	0.03121
39	0.14800	0.13553	0.11325	0.11011	0.11368	0.09783	0.08587	0.07524	0.09459	0.05893	0.06814	0.04375	0.03719	0.03438	0.02727	0.02868	0.03101	0.03358
40	0.07662	0.10000	0.10533	0.07262	0.06923	0.06458	0.05000	0.07582	0.04712	0.05273	0.05268	0.02655	0.02411	0.02650	0.02114	0.02366	0.01679	0.01550
41	0.07500	0.06364	0.06081	0.05556	0.04938	0.03516	0.04681	0.03222	0.04270	0.04038	0.03063	0.03214	0.03451	0.02500	0.02844	0.02049	0.01591	0.01364
42	0.07258	0.05634	0.06883	0.05789	0.04932	0.05000	0.04778	0.04409	0.05169	0.03372	0.03922	0.02072	0.01518	0.01696	0.01538	0.01091	0.01393	0.01069
43	0.06167	0.04516	0.04225	0.04722	0.04789	0.03836	0.03291	0.02247	0.02283	0.03297	0.02584	0.01881	0.00818	0.01284	0.01818	0.00777	0.00818	0.00820
44	0.03167	0.03333	0.03387	0.01940	0.01765	0.03000	0.01667	0.01410	0.01364	0.01932	0.01149	0.01591	0.00990	0.00571	0.00865	0.00741	0.00196	0.00273
45	0.01786	0.01356	0.01695	0.01935	0.01343	0.01642	0.01739	0.01000	0.01299	0.01220	0.00723	0.00805	0.01136	0.00816	0.00588	0.00190	0.00374	0.00000
46	0.01273	0.01818	0.01017	0.01667	0.01311	0.00758	0.01061	0.00882	0.00580	0.00972	0.00641	0.00488	0.00233	0.00222	0.00200	0.00097	0.00190	0.00374
47	0.00536	0.00000	0.00182	0.00175	0.00517	0.00333	0.00308	0.00462	0.00448	0.00000	0.00000	0.00128	0.00000	0.00241	0.00000	0.00000	0.00099	0.00000
48	0.00185	0.00179	0.00185	0.00000	0.00169	0.00526	0.00333	0.00000	0.00000	0.00000	0.00000	0.00133	0.00132	0.00125	0.00366	0.00000	0.00103	0.00101
49	0.00566	0.00189	0.00000	0.00000	0.00167	0.00172	0.00000	0.00172	0.00159	0.00448	0.00145	0.00000	0.00133	0.00127	0.00000	0.00000	0.00118	0.00104
50	0.00000	0.00000	0.00189	0.00364	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
TFR	6.17582	6.27960	5.95501	5.70890	5.53747	5.56831	5.46090	5.34588	5.17675	5.05175	4.50653	4.01305	3.57508	3.27596	3.07923	2.98408	2.74993	2.65370

Notes: Ethnicity of Birth constructed on combined blood fraction of parents (50 per cent or more Maori blood)

Source: Cheung, Jackson and Pool 1994

APPENDIX I.9.1 (continued)

I.9.1.1 (cont.):

Age-Specific Fertility Ratios: Births Per Woman, By Ethnic Classification of Birth and Single Year of Age of Mother, Sole/Single Origin Maori, 1961-1993

Age of Mot	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
11	0.00000	0.00000	0.00026	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
12	0.00078	0.00026	0.00000	0.00026	0.00000	0.00000	0.00000	0.00000	0.00032	0.00000	0.00000	0.00000	0.00000	0.00000
13	0.00000	0.00080	0.00078	0.00102	0.00000	0.00053	0.00028	0.00029	0.00061	0.00063	0.00000	0.00062	0.00000	0.00089
14	0.00346	0.00480	0.00404	0.00474	0.00381	0.00357	0.00217	0.00475	0.00115	0.00150	0.00311	0.00184	0.00307	0.00211
15	0.02187	0.01602	0.01762	0.01452	0.02000	0.01404	0.01168	0.01409	0.01219	0.01111	0.01302	0.01574	0.01311	0.01372
16	0.05506	0.05722	0.04873	0.04904	0.05537	0.04202	0.04153	0.04460	0.04082	0.04129	0.04224	0.03862	0.03774	0.04424
17	0.09010	0.09700	0.09745	0.09548	0.09074	0.08715	0.08694	0.09254	0.08343	0.08532	0.07642	0.07471	0.07325	0.06805
18	0.13744	0.14439	0.14155	0.13066	0.13456	0.11841	0.12828	0.12605	0.11648	0.11657	0.11517	0.10173	0.10742	0.11651
19	0.16487	0.16382	0.14114	0.14441	0.14379	0.14441	0.13692	0.15436	0.12493	0.13501	0.13534	0.12966	0.13499	0.13263
20	0.18364	0.19343	0.17110	0.14766	0.15304	0.14282	0.14792	0.14827	0.14212	0.12909	0.12111	0.13926	0.14366	0.12624
21	0.18885	0.18429	0.16159	0.16608	0.17221	0.15294	0.15952	0.16930	0.16243	0.16029	0.13523	0.15086	0.14328	0.15294
22	0.17805	0.17347	0.15164	0.15289	0.18012	0.16291	0.15994	0.16422	0.14735	0.15350	0.13645	0.13930	0.15120	0.14750
23	0.17080	0.17216	0.16307	0.16040	0.15545	0.15838	0.14697	0.14970	0.16242	0.14906	0.15368	0.13761	0.15000	0.14554
24	0.16304	0.16157	0.13903	0.15090	0.15186	0.13435	0.13983	0.14826	0.13830	0.13239	0.13892	0.13913	0.15298	0.14105
25	0.14599	0.14803	0.13109	0.13446	0.15609	0.13741	0.12888	0.13440	0.12412	0.13712	0.14006	0.13587	0.14290	0.14936
26	0.12611	0.13262	0.14094	0.11679	0.13068	0.12584	0.12320	0.13180	0.12478	0.11726	0.11981	0.12006	0.12427	0.12830
27	0.12192	0.12556	0.11724	0.11855	0.12038	0.12107	0.10751	0.10323	0.11564	0.11899	0.12814	0.12143	0.12251	0.11895
28	0.10097	0.10140	0.10596	0.10721	0.10658	0.10494	0.10399	0.09766	0.10385	0.12018	0.10893	0.10539	0.11246	0.10968
29	0.08621	0.10804	0.09052	0.08726	0.10140	0.10042	0.07593	0.09250	0.09465	0.10032	0.09939	0.10958	0.10000	0.11388
30	0.07231	0.08485	0.06888	0.08381	0.09409	0.08411	0.07211	0.08051	0.07393	0.08215	0.09642	0.08602	0.09755	0.09414
31	0.07191	0.07306	0.06193	0.06959	0.07549	0.06897	0.07174	0.07520	0.06852	0.07276	0.08095	0.07608	0.09522	0.07994
32	0.05169	0.06333	0.05440	0.05765	0.04450	0.05969	0.05899	0.06300	0.06895	0.07094	0.07080	0.06690	0.07931	0.07947
33	0.04419	0.05118	0.04413	0.04180	0.05078	0.05683	0.05189	0.05519	0.05273	0.06543	0.06269	0.05672	0.06667	0.06882
34	0.05125	0.04313	0.03879	0.04545	0.03750	0.03777	0.03198	0.04663	0.05577	0.04886	0.04650	0.05985	0.05779	0.05055
35	0.04722	0.02994	0.03654	0.03210	0.03616	0.03681	0.03454	0.03692	0.03350	0.03317	0.03991	0.04355	0.04846	0.05038
36	0.03185	0.02534	0.02704	0.03141	0.03036	0.02611	0.03403	0.03131	0.02714	0.03524	0.03551	0.02974	0.03216	0.03694
37	0.03188	0.02444	0.02069	0.01677	0.02208	0.01520	0.02011	0.02188	0.02462	0.02312	0.02417	0.03180	0.02924	0.03359
38	0.02555	0.02270	0.02707	0.01538	0.01783	0.02133	0.01667	0.01808	0.01905	0.02216	0.02268	0.02379	0.02140	0.01974
39	0.01727	0.02074	0.01818	0.01288	0.01849	0.01494	0.01250	0.01570	0.01453	0.01257	0.01487	0.01582	0.01857	0.02283
40	0.01250	0.01429	0.01387	0.01439	0.01128	0.01438	0.01118	0.00798	0.01098	0.01500	0.01094	0.01179	0.01269	0.01422
41	0.01484	0.00719	0.00857	0.00815	0.00938	0.00530	0.00993	0.00927	0.00938	0.00714	0.00852	0.00909	0.00632	0.01042
42	0.01288	0.00781	0.00949	0.01029	0.00769	0.00480	0.00682	0.00857	0.00662	0.00755	0.00121	0.00578	0.00543	0.00588
43	0.00153	0.00833	0.00547	0.00303	0.00376	0.00317	0.00216	0.00226	0.00435	0.00203	0.00452	0.00438	0.00359	0.00281
44	0.00331	0.00403	0.00424	0.00394	0.00231	0.00077	0.00233	0.00432	0.00153	0.00296	0.00069	0.00132	0.00258	0.00123
45	0.00091	0.00000	0.00161	0.00000	0.00079	0.00153	0.00154	0.00308	0.00000	0.00075	0.00145	0.00068	0.00267	0.00258
46	0.00099	0.00096	0.00259	0.00080	0.00180	0.00079	0.00153	0.00078	0.00079	0.00145	0.00000	0.00000	0.00071	0.00000
47	0.00000	0.00196	0.00097	0.00000	0.00000	0.00093	0.00083	0.00000	0.00000	0.00000	0.00000	0.00079	0.00080	0.00075
48	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00082	0.00000	0.00000	0.00000
49	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00078	0.00000	0.00000	0.00000	0.00000
50	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
TFR	2.43121	2.46816	2.26822	2.22977	2.34035	2.20467	2.14235	2.25668	2.16794	2.21369	2.18968	2.18551	2.29399	2.28588

Notes: Ethnicity of Birth constructed on combined blood fraction of parents (50 per cent or more Maori blood)

Source: Cheung, Jackson and Pool 1994

APPENDIX I.9.1 (continued)

1.9.1.2 :

Age-Specific Fertility Ratios: Births Per Woman, By Ethnic Classification of Birth and Single Year of Age of Mother, Non-Maori, 1961-1993

Age of Mother	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
11	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00004	0.00000	0.00000	0.00000	0.00000	0.00004	0.00008
12	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00004	0.00000	0.00004	0.00004	0.00004	0.00000	0.00004	0.00004	0.00012	0.00008
13	0.00014	0.00023	0.00000	0.00009	0.00013	0.00021	0.00021	0.00012	0.00012	0.00008	0.00004	0.00018	0.00029	0.00011	0.00011	0.00011	0.00000	0.00000
14	0.00063	0.00082	0.00100	0.00113	0.00129	0.00170	0.00111	0.00088	0.00102	0.00100	0.00089	0.00155	0.00147	0.00131	0.00132	0.00113	0.00118	0.00104
15	0.00396	0.00329	0.00408	0.00374	0.00520	0.00611	0.00549	0.00621	0.00600	0.00683	0.00812	0.00926	0.00987	0.00774	0.00690	0.00756	0.00682	0.00469
16	0.01512	0.01652	0.02041	0.01923	0.02117	0.02280	0.02317	0.02348	0.02351	0.02874	0.02908	0.03037	0.03040	0.02726	0.02432	0.02144	0.02021	0.01645
17	0.04219	0.04242	0.04702	0.04690	0.05087	0.05625	0.05790	0.05845	0.05933	0.05933	0.06526	0.06079	0.05603	0.04926	0.04378	0.03973	0.03532	0.03236
18	0.07991	0.08756	0.07971	0.08366	0.08794	0.08842	0.09188	0.09162	0.09054	0.09672	0.09385	0.08152	0.07594	0.06692	0.05939	0.05828	0.05071	0.05017
19	0.11656	0.12902	0.11950	0.11587	0.12475	0.12674	0.12457	0.11639	0.11686	0.12207	0.12121	0.11033	0.09925	0.08842	0.08356	0.07628	0.07038	0.06661
20	0.17368	0.16722	0.16477	0.15848	0.14595	0.15543	0.15611	0.14751	0.14916	0.14965	0.14513	0.13664	0.12473	0.11266	0.10493	0.09586	0.08603	0.08529
21	0.23527	0.22565	0.20102	0.19836	0.19349	0.18067	0.19157	0.17952	0.17359	0.17924	0.17171	0.15996	0.15416	0.13683	0.12845	0.12274	0.10979	0.10249
22	0.27653	0.26213	0.25136	0.22660	0.22407	0.21911	0.20933	0.22012	0.20830	0.20830	0.19584	0.18299	0.17672	0.15543	0.15089	0.14284	0.12987	0.13417
23	0.30359	0.28115	0.26841	0.25681	0.23895	0.24589	0.24215	0.22920	0.23247	0.22794	0.21489	0.19995	0.19119	0.17741	0.17176	0.16101	0.15200	0.15329
24	0.30774	0.29145	0.26237	0.25905	0.25676	0.23595	0.24788	0.24369	0.23091	0.23737	0.22888	0.20863	0.20411	0.18315	0.18317	0.17323	0.16103	0.16153
25	0.30008	0.27477	0.25821	0.24594	0.24352	0.24648	0.23250	0.24086	0.23029	0.22287	0.21933	0.20675	0.19923	0.18969	0.17841	0.17122	0.16959	0.17456
26	0.28055	0.26733	0.23890	0.22576	0.21911	0.22641	0.23365	0.21298	0.21783	0.22098	0.19985	0.19224	0.19075	0.17829	0.16791	0.16609	0.15872	0.17568
27	0.25039	0.23935	0.22201	0.20704	0.19811	0.19751	0.20438	0.21489	0.19037	0.19928	0.19168	0.17283	0.16502	0.15790	0.15477	0.15980	0.14466	0.16095
28	0.23645	0.22244	0.20805	0.18748	0.18138	0.18113	0.18087	0.18151	0.17684	0.17454	0.16420	0.15779	0.13852	0.14434	0.13820	0.14221	0.13575	0.14256
29	0.20915	0.19946	0.19057	0.16746	0.16132	0.15799	0.15625	0.14997	0.15900	0.16002	0.13761	0.13418	0.12617	0.11498	0.12143	0.12248	0.11378	0.12378
30	0.18727	0.18199	0.16380	0.14152	0.13835	0.13056	0.13970	0.14025	0.12881	0.13299	0.12291	0.11508	0.10580	0.10073	0.09296	0.10092	0.09650	0.10163
31	0.16753	0.15837	0.13908	0.12540	0.11683	0.11196	0.10932	0.10796	0.10326	0.10793	0.09920	0.09397	0.08542	0.07993	0.08069	0.07752	0.08204	0.08010
32	0.14874	0.14189	0.13435	0.11722	0.10802	0.10075	0.09561	0.09921	0.08727	0.09205	0.08463	0.07598	0.07508	0.06566	0.06464	0.06289	0.05674	0.07009
33	0.12629	0.12403	0.11926	0.10145	0.09369	0.08323	0.07941	0.08116	0.07765	0.07679	0.07306	0.06298	0.05565	0.05432	0.05095	0.05169	0.05035	0.05228
34	0.10712	0.10260	0.09910	0.09178	0.07824	0.07826	0.07500	0.07231	0.06737	0.06460	0.05869	0.05284	0.04605	0.04047	0.04322	0.04190	0.03891	0.03937
35	0.09449	0.09519	0.09204	0.08141	0.07488	0.06249	0.06355	0.06245	0.05827	0.05180	0.05075	0.04436	0.03848	0.03224	0.03068	0.03300	0.03235	0.03479
36	0.08562	0.08055	0.07519	0.06411	0.05809	0.05725	0.05447	0.04982	0.04585	0.04098	0.04496	0.03709	0.03302	0.02887	0.02831	0.02467	0.02318	0.02658
37	0.06830	0.06518	0.05917	0.05540	0.05297	0.04601	0.04388	0.03951	0.03914	0.03683	0.03218	0.03017	0.02542	0.02246	0.01945	0.01922	0.01772	0.01827
38	0.05824	0.05895	0.05404	0.04614	0.04222	0.03714	0.03931	0.03765	0.03367	0.03073	0.02881	0.02356	0.02413	0.01717	0.01419	0.01506	0.01499	0.01429
39	0.04710	0.04498	0.04386	0.03783	0.03333	0.03098	0.02701	0.02900	0.02829	0.02452	0.02416	0.01888	0.01671	0.01326	0.01189	0.01025	0.01146	0.01056
40	0.03953	0.03432	0.03216	0.03169	0.02867	0.02637	0.02210	0.02381	0.01965	0.01963	0.01670	0.01428	0.01321	0.01133	0.00897	0.00995	0.00668	0.00740
41	0.02733	0.02613	0.02418	0.02392	0.01871	0.01729	0.01660	0.01664	0.01286	0.01312	0.01391	0.01105	0.00823	0.00793	0.00625	0.00675	0.00647	0.00512
42	0.01941	0.01940	0.02024	0.01515	0.01461	0.01445	0.01306	0.01253	0.01141	0.01013	0.00821	0.00869	0.00707	0.00584	0.00502	0.00513	0.00393	0.00449
43	0.01096	0.01224	0.01238	0.01169	0.01011	0.00934	0.00837	0.00715	0.00646	0.00588	0.00482	0.00474	0.00356	0.00337	0.00287	0.00309	0.00376	0.00231
44	0.00850	0.00689	0.00746	0.00762	0.00625	0.00518	0.00593	0.00444	0.00459	0.00414	0.00354	0.00275	0.00169	0.00230	0.00236	0.00177	0.00165	0.00182
45	0.00507	0.00348	0.00370	0.00291	0.00323	0.00380	0.00260	0.00257	0.00175	0.00135	0.00228	0.00170	0.00089	0.00135	0.00123	0.00044	0.00052	0.00091
46	0.00166	0.00146	0.00193	0.00134	0.00146	0.00165	0.00154	0.00101	0.00109	0.00102	0.00068	0.00069	0.00054	0.00061	0.00034	0.00055	0.00044	0.00038
47	0.00095	0.00051	0.00058	0.00082	0.00060	0.00069	0.00046	0.00020	0.00027	0.00060	0.00047	0.00054	0.00021	0.00014	0.00007	0.00027	0.00021	0.00052
48	0.00066	0.00051	0.00007	0.00015	0.00022	0.00030	0.00028	0.00013	0.00040	0.00007	0.00014	0.00007	0.00014	0.00007	0.00000	0.00021	0.00007	0.00021
49	0.00008	0.00007	0.00022	0.00014	0.00000	0.00015	0.00008	0.00007	0.00013	0.00013	0.00000	0.00000	0.00000	0.00000	0.00014	0.00000	0.00007	0.00000
50	0.00000	0.00000	0.00000	0.00000	0.00007	0.00007	0.00000	0.00008	0.00014	0.00007	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
TFR	4.03678	3.86957	3.62022	3.36128	3.23457	3.16674	3.15732	3.10535	2.99451	3.01032	2.85775	2.64550	2.48517	2.27973	2.18353	2.12732	1.99405	2.05691

Notes: *All Births minus Births classified Maori

Source: Cheung, Jackson and Pool 1994

APPENDIX I.9.1 (continued)

I.9.1.2 (cont.):

Age-Specific Fertility Ratios: Births Per Woman, By Ethnic Classification of Birth and Single Year of Age of Mother, Non-Maori, 1961-1993

Age of Mot	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
11	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00004	0.00005	0.00000	0.00009	0.00000	0.00000	0.00000
12	0.00012	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00004	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
13	0.00016	0.00012	0.00012	0.00008	0.00007	0.00015	0.00008	0.00008	0.00017	0.00013	0.00018	0.00005	0.00023	0.00014
14	0.00099	0.00087	0.00071	0.00057	0.00079	0.00066	0.00082	0.00077	0.00057	0.00104	0.00093	0.00099	0.00069	0.00069
15	0.00423	0.00386	0.00341	0.00348	0.00309	0.00338	0.00331	0.00342	0.00361	0.00348	0.00383	0.00421	0.00309	0.00341
16	0.01329	0.01455	0.01127	0.01153	0.00953	0.01080	0.01114	0.01207	0.01143	0.01237	0.01260	0.01420	0.01275	0.01237
17	0.02904	0.02728	0.02622	0.02225	0.02214	0.02426	0.02332	0.02277	0.02531	0.02802	0.02612	0.02724	0.02635	0.02312
18	0.04283	0.04196	0.03807	0.03600	0.03219	0.03284	0.03414	0.03484	0.03846	0.03934	0.04296	0.04160	0.04081	0.04153
19	0.06220	0.06049	0.05288	0.05109	0.04510	0.04737	0.04782	0.05051	0.05064	0.05241	0.05643	0.05614	0.05199	0.05000
20	0.08352	0.07881	0.06983	0.06768	0.06199	0.05724	0.06346	0.06392	0.06754	0.06435	0.06741	0.06900	0.06400	0.06310
21	0.09800	0.09652	0.08972	0.08534	0.07945	0.07818	0.07861	0.07774	0.08348	0.08374	0.08582	0.08236	0.07530	0.07272
22	0.12456	0.11789	0.11166	0.10885	0.09762	0.09850	0.09633	0.09657	0.09893	0.10017	0.09957	0.09359	0.08782	0.08426
23	0.14606	0.13883	0.13502	0.12593	0.12092	0.11797	0.12120	0.11848	0.11542	0.11127	0.11710	0.11211	0.10173	0.09751
24	0.15890	0.15728	0.14236	0.13995	0.13530	0.13707	0.13236	0.13568	0.13439	0.13003	0.12565	0.12145	0.11517	0.11513
25	0.16535	0.16059	0.15687	0.14937	0.15735	0.15080	0.14173	0.14288	0.14843	0.14176	0.13880	0.13990	0.12746	0.11990
26	0.16899	0.16238	0.16257	0.15438	0.15530	0.15928	0.15369	0.15182	0.15290	0.15715	0.15423	0.14738	0.14184	0.13445
27	0.15661	0.15929	0.15100	0.15288	0.15172	0.15363	0.15481	0.15485	0.15774	0.16153	0.15901	0.15122	0.14800	0.14632
28	0.13353	0.13811	0.14145	0.14422	0.14954	0.14294	0.15011	0.15465	0.15548	0.16028	0.15860	0.15668	0.15499	0.15589
29	0.12358	0.12334	0.12271	0.12625	0.13291	0.13353	0.13927	0.14222	0.15047	0.14869	0.15360	0.15172	0.15085	0.15392
30	0.09935	0.10105	0.10759	0.10532	0.11259	0.11322	0.12623	0.12738	0.13554	0.13831	0.14565	0.14334	0.14395	0.14146
31	0.08593	0.08715	0.08768	0.08742	0.09146	0.09732	0.10351	0.10982	0.11771	0.11939	0.12937	0.12547	0.12710	0.12779
32	0.06549	0.06795	0.06958	0.07323	0.07538	0.07991	0.08640	0.09020	0.09946	0.10143	0.11272	0.11080	0.11183	0.11355
33	0.05159	0.05256	0.05388	0.06028	0.06215	0.06308	0.06830	0.07900	0.08684	0.08741	0.08752	0.09466	0.09729	0.09877
34	0.03879	0.04378	0.04190	0.04190	0.04790	0.04717	0.05425	0.06154	0.06582	0.06706	0.07487	0.07924	0.07640	0.08042
35	0.03271	0.03030	0.03357	0.03345	0.03593	0.03794	0.04100	0.04639	0.05201	0.05306	0.06290	0.06423	0.06652	0.06600
36	0.02423	0.02328	0.02392	0.02366	0.02716	0.02877	0.03109	0.03516	0.03973	0.04087	0.04688	0.04994	0.05108	0.04951
37	0.01900	0.01909	0.01903	0.01698	0.01863	0.02025	0.02260	0.02472	0.02799	0.02941	0.03407	0.03522	0.03548	0.03633
38	0.01550	0.01435	0.01369	0.01445	0.01364	0.01453	0.01536	0.01858	0.02125	0.02135	0.02299	0.02826	0.02845	0.02867
39	0.01078	0.01009	0.00959	0.01097	0.01004	0.00916	0.01109	0.01237	0.01533	0.01609	0.01864	0.01853	0.02055	0.02102
40	0.00675	0.00733	0.00722	0.00737	0.00730	0.00681	0.00748	0.00757	0.00961	0.01005	0.01099	0.01242	0.01403	0.01304
41	0.00560	0.00451	0.00420	0.00482	0.00520	0.00515	0.00410	0.00484	0.00636	0.00606	0.00687	0.00905	0.00901	0.00928
42	0.00298	0.00364	0.00393	0.00322	0.00431	0.00372	0.00320	0.00313	0.00321	0.00451	0.00491	0.00539	0.00530	0.00475
43	0.00212	0.00279	0.00216	0.00195	0.00205	0.00175	0.00190	0.00252	0.00180	0.00213	0.00236	0.00194	0.00331	0.00369
44	0.00163	0.00127	0.00110	0.00119	0.00113	0.00083	0.00154	0.00160	0.00142	0.00139	0.00106	0.00141	0.00114	0.00142
45	0.00109	0.00037	0.00100	0.00062	0.00053	0.00048	0.00046	0.00052	0.00095	0.00093	0.00066	0.00051	0.00059	0.00080
46	0.00046	0.00038	0.00029	0.00043	0.00061	0.00033	0.00031	0.00017	0.00052	0.00036	0.00035	0.00028	0.00051	0.00028
47	0.00045	0.00023	0.00038	0.00043	0.00028	0.00027	0.00013	0.00037	0.00012	0.00018	0.00036	0.00018	0.00011	0.00036
48	0.00022	0.00015	0.00015	0.00015	0.00014	0.00007	0.00014	0.00014	0.00006	0.00018	0.00006	0.00012	0.00006	0.00000
49	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00007	0.00006	0.00012	0.00018	0.00000	0.00006
50	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
TFR	1.97657	1.95243	1.89673	1.86768	1.87148	1.87937	1.93127	1.98936	2.08084	2.09601	2.16627	2.15099	2.09581	2.07165

Notes: Ethnicity of Birth constructed on combined blood fraction of parents (50 per cent or more Maori blood)

Source: Cheung, Jackson and Pool 1994

APPENDIX I.9.2

Age-Specific Fertility Rates: Births Per Woman, By Single Year of Age of Mother, Maori Ethnic Group*, 1981-1993

Age of Mother	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
11											
12											
13											
14											
15	0.01464	0.01561	0.01331	0.01627	0.01235	0.01166	0.01223	0.01209	0.01139	0.01239	0.01382
16	0.04869	0.04516	0.04251	0.04826	0.03709	0.03968	0.03940	0.03732	0.03771	0.03876	0.03651
17	0.08256	0.08587	0.08735	0.07888	0.08164	0.07873	0.07954	0.08062	0.08158	0.07374	0.06995
18	0.12532	0.12070	0.11555	0.11831	0.11055	0.11680	0.11450	0.11196	0.11056	0.11094	0.09938
19	0.14550	0.13010	0.13843	0.13366	0.14206	0.13123	0.14072	0.12941	0.13188	0.13287	0.13107
20	0.17448	0.15390	0.13508	0.14140	0.13996	0.14838	0.14663	0.15029	0.13329	0.13523	0.14046
21	0.16438	0.14968	0.16145	0.14985	0.14798	0.15343	0.16296	0.16455	0.16655	0.15381	0.15410
22	0.16658	0.15140	0.14443	0.16308	0.15059	0.15801	0.15676	0.15289	0.16435	0.14732	0.14572
23	0.16179	0.15702	0.15316	0.14679	0.15808	0.15246	0.15108	0.16254	0.15300	0.16151	0.15187
24	0.14381	0.13251	0.14486	0.14951	0.14620	0.15182	0.14843	0.14897	0.14937	0.15627	0.15486
25	0.14736	0.12091	0.13306	0.13469	0.13688	0.14220	0.14342	0.13806	0.14888	0.14678	0.15744
26	0.13206	0.14319	0.11245	0.12878	0.12501	0.14363	0.13746	0.13691	0.13623	0.13231	0.13177
27	0.11409	0.11121	0.12197	0.11544	0.12383	0.12152	0.11656	0.13925	0.13376	0.13504	0.13459
28	0.10131	0.09683	0.10173	0.09831	0.09819	0.11354	0.11550	0.12149	0.13149	0.12582	0.12407
29	0.10085	0.08234	0.08361	0.09200	0.10248	0.09591	0.10348	0.10940	0.11726	0.11821	0.12414
30	0.07212	0.07439	0.08127	0.08398	0.07555	0.08432	0.09234	0.09269	0.09882	0.10816	0.10477
31	0.06864	0.06190	0.06865	0.06657	0.06354	0.07520	0.07937	0.08254	0.08799	0.09309	0.09272
32	0.05930	0.05016	0.05337	0.04666	0.05547	0.06295	0.06071	0.07565	0.07726	0.08891	0.08422
33	0.04720	0.04702	0.04228	0.04968	0.05261	0.05474	0.05499	0.06002	0.06862	0.06916	0.06693
34	0.04352	0.03349	0.03882	0.03489	0.03540	0.04094	0.04679	0.05563	0.05230	0.04933	0.06390
35	0.02457	0.03232	0.02990	0.03705	0.03397	0.03105	0.04192	0.03679	0.03888	0.05190	0.04800
36	0.02381	0.02400	0.02728	0.03135	0.02677	0.03734	0.03441	0.03041	0.04326	0.03822	0.03800
37	0.02187	0.02094	0.01680	0.01658	0.01951	0.02211	0.02311	0.02627	0.02675	0.02571	0.03678
38	0.01749	0.02274	0.01515	0.01555	0.02036	0.01453	0.02330	0.02277	0.02283	0.02056	0.03027
39	0.01916	0.01433	0.00848	0.01830	0.01214	0.01238	0.01618	0.01573	0.01407	0.01612	0.01853
40	0.01241	0.01225	0.01446	0.01104	0.01399	0.00861	0.00883	0.01340	0.01500	0.01325	0.01298
41	0.00593	0.00717	0.00941	0.00841	0.00497	0.01070	0.00817	0.01203	0.00855	0.00807	0.01020
42	0.00763	0.00962	0.00847	0.00771	0.00396	0.00881	0.00719	0.00773	0.00790	0.00306	0.00625
43	0.00752	0.00517	0.00365	0.00231	0.00329	0.00286	0.00254	0.00483	0.00168	0.00424	0.00413
44	0.00506	0.00347	0.00590	0.00185	0.00119	0.00202	0.00409	0.00128	0.00244	0.00057	0.00160
45	0.00000	0.00192	0.00000	0.00133	0.00125	0.00182	0.00271	0.00060	0.00129	0.00000	0.00115
46	0.00156		0.00129	0.00143	0.00135	0.00127		0.00204	0.00122	0.00000	0.00000
47	0.00082			0.00000	0.00073	0.00069			0.00068	0.00000	0.00066
48	0.00000				0.00000	0.00000				0.00069	0.00000
49	0.00000					0.00000					0.00000
50											
TFR	2.2620	2.1173	2.1141	2.1499	2.1390	2.2313	2.2753	2.3362	2.3768	2.3720	2.3908

Notes: *Mothers claiming 25 per cent or more Maori blood

Source: Database C (Unpublished data provided by Statistics New Zealand)

APPENDIX I.9.2 (continued)

Age-Specific Fertility Rates: Births Per Woman, By Single Year of Age of Mother, Non-Maori*, 1981-1993

Age of Mother	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
11											
12											
13											
14											
15	0.00358	0.00306	0.00320	0.00306	0.00331	0.00284	0.00308	0.00303	0.00285	0.00314	0.00381
16	0.01404	0.01045	0.01122	0.00892	0.01057	0.00988	0.01142	0.01032	0.01126	0.01136	0.01258
17	0.02629	0.02502	0.02154	0.02219	0.02284	0.02205	0.02235	0.02353	0.02540	0.02344	0.02511
18	0.04044	0.03674	0.03499	0.03295	0.03197	0.03235	0.03416	0.03711	0.03782	0.03902	0.03876
19	0.05954	0.05078	0.04861	0.04437	0.04695	0.04527	0.05030	0.04885	0.05109	0.05426	0.05164
20	0.07788	0.06867	0.06785	0.06197	0.05652	0.06102	0.06125	0.06510	0.06361	0.06422	0.06678
21	0.09872	0.08928	0.08362	0.08109	0.07741	0.07579	0.07568	0.07980	0.08191	0.08262	0.08003
22	0.11997	0.11105	0.11002	0.09885	0.09790	0.09318	0.09297	0.09695	0.09557	0.09750	0.09288
23	0.14493	0.13710	0.12857	0.12391	0.11756	0.11852	0.11506	0.11034	0.10936	0.11407	0.11128
24	0.16326	0.15065	0.14335	0.13863	0.13848	0.13167	0.13260	0.12928	0.12500	0.12339	0.12285
25	0.16570	0.16412	0.15855	0.16418	0.15395	0.14479	0.14456	0.14599	0.13732	0.13899	0.14138
26	0.16817	0.16732	0.16486	0.16395	0.16386	0.15621	0.15953	0.15430	0.15212	0.15245	0.14749
27	0.16596	0.15847	0.16041	0.16135	0.16055	0.15929	0.16057	0.15958	0.15864	0.15855	0.14975
28	0.14121	0.15005	0.15323	0.15973	0.14909	0.15449	0.16031	0.16004	0.16045	0.16062	0.15613
29	0.12892	0.12808	0.13565	0.14201	0.14014	0.14133	0.14793	0.15873	0.15185	0.15644	0.15448
30	0.10451	0.11267	0.11140	0.12102	0.12192	0.13046	0.13213	0.14288	0.14457	0.15118	0.14650
31	0.09018	0.08983	0.09326	0.09757	0.10472	0.10795	0.11623	0.12241	0.12537	0.13393	0.12900
32	0.06932	0.07203	0.07569	0.08071	0.08436	0.08902	0.09503	0.10304	0.10549	0.11545	0.11331
33	0.05335	0.05448	0.06200	0.06389	0.06780	0.06923	0.08071	0.08902	0.09033	0.09082	0.09815
34	0.04476	0.04274	0.04338	0.04964	0.04885	0.05518	0.06235	0.06748	0.06898	0.07815	0.08191
35	0.03237	0.03472	0.03417	0.03677	0.03937	0.04163	0.04666	0.05306	0.05398	0.06364	0.06539
36	0.02419	0.02556	0.02455	0.02742	0.02952	0.03131	0.03454	0.03992	0.04100	0.04755	0.05065
37	0.01991	0.01980	0.01824	0.01970	0.02017	0.02286	0.02505	0.02718	0.02975	0.03439	0.03603
38	0.01496	0.01450	0.01530	0.01493	0.01478	0.01572	0.01862	0.02066	0.02066	0.02348	0.02834
39	0.00995	0.00999	0.01180	0.01052	0.00997	0.01134	0.01257	0.01521	0.01574	0.01833	0.01878
40	0.00746	0.00724	0.00722	0.00751	0.00707	0.00821	0.00774	0.00950	0.00999	0.01081	0.01234
41	0.00482	0.00433	0.00470	0.00521	0.00531	0.00414	0.00521	0.00617	0.00602	0.00690	0.00908
42	0.00365	0.00406	0.00335	0.00429	0.00377	0.00305	0.00329	0.00315	0.00446	0.00480	0.00537
43	0.00287	0.00217	0.00200	0.00225	0.00174	0.00185	0.00257	0.00174	0.00225	0.00235	0.00195
44	0.00110	0.00115	0.00095	0.00123	0.00083	0.00157	0.00161	0.00147	0.00145	0.00113	0.00142
45	0.00038	0.00095	0.00065	0.00048	0.00052	0.00042	0.00052	0.00093	0.00092	0.00082	0.00049
46	0.00031		0.00037	0.00065	0.00027	0.00032		0.00041	0.00038	0.00037	0.00029
47	0.00031			0.00029	0.00029	0.00014			0.00012	0.00038	0.00019
48	0.00015				0.00007	0.00014				0.00006	0.00013
49	0.00000					0.00000					0.00018
TFR	2.0031	1.9471	1.9347	1.9512	1.9324	1.9432	2.0166	2.0872	2.0857	2.1646	2.1544

Notes: *All Mothers minus Mothers claiming 25 per cent or more Maori blood

Source: Database C (Unpublished data provided by Statistics New Zealand)

APPENDIX I.9.3

Age of Cohort at Peak Age-Specific Fertility Ratio/Rate, By Ethnic Classification, and Gap in Years Between Peak Age of Cohorts of Each Ethnic Group, Selected Birth Cohorts 1937-1971

Year of Birth of Cohort	Age at Peak Age-Specific Fertility Ratio/Rate				Gap in Years (Non-Maori minus Maori)	
	Non-Maori		Maori			
	Ratios	Rates	Ratios	Rates	Ratios	Rates
1937	24	n/d	23	n/d	1	...
1938	23	n/d	23	n/d	0	...
1939	23	n/d	22	n/d	1	...
1940	23	n/d	23	n/d	0	...
1941	23	n/d	22	n/d	1	...
1942	23	n/d	22	n/d	1	...
1943	23	n/d	21	n/d	2	...
1944	24	n/d	20	n/d	4	...
1945	24	n/d	21	n/d	3	...
1946	24	n/d	22	n/d	2	...
1947	24	n/d	21	n/d	3	...
1948	24	n/d	20	n/d	4	...
1949	23	n/d	20	n/d	3	...
1950	24	n/d	21	n/d	3	...
1951	23	n/d	20	n/d	3	...
1952	24	n/d	20	n/d	4	...
1953	25	n/d	19	n/d	6	...
1954	25	n/d	19	n/d	6	...
1955	25	26	20	20	5	6
1956	26	26	21	21	5	5
1957	24	26	20	20	4	6
1958	26	26	19	19	7	7
1959	26	25	19	19	7	6
1960	28	27	21	20	7	7
1961	28	28	20	20	8	8
1962	27	28	22	22	5	6
1963	27	27	21	23	6	4
1964	28	28	22	22	6	6
1965	28	28	22	23	6	5
1966	...	...	21	21	...	...
1967	...	...	21	21	...	...
1968	...	...	21	21	...	...
1969	...	...	23	23	...	...
1970	...	...	22	22	...	...
1971	...	...	22	23	...	...

Notes: n/d = data not available

Peak age not shown for cohorts where most recent observation = highest ASFR yet completed.

Source: Ratios: Compiled from Cheung, Jackson and Pool 1994

Rates: Database C

APPENDIX I.10

Labour Force Participation Rate, Percentage In Employment within Labour Force, and Age at Peak Age-Specific Fertility Rate, By Ethnic Classification and Cohort, Selected Years, 1951-1991

Year/ Year of Observation	NON-MAORI*			MAORI*		
	LFPR (a)	Employment in Labour Force	Age at Peak ASFR	LFPR (a)	Employment in Labour Force	Age at Peak ASFR
1951 (Born 1927-31)	54.36	98.73	25	33.02	97.30	...
1956 (Born 1932-36)	52.05	...	24	35.85	...	...
1961 (Born 1937-41)	51.30	...	23	35.38	...	22
1966 (Born 1942-46)	54.32	...	24	36.56	...	21
1971 (Born 1947-51)	56.03	...	23	41.46	...	20
1976 (Born 1952-56)	60.71	96.75	25	40.43	89.53	20
1981 (Born 1957-61)	66.08	94.12	26	43.75	81.59	20
1986 (Born 1962-66)	76.66	91.22	28	57.64	74.60	21
1991 (Born 1976-71)	71.7	85.5	28	51.50	67.00	21

Notes: *1951-1986 = Sole/Single Origin Maori; 1991 = Maori Ethnic Group
Non-Maori = Total minus specified Maori classification

Source: Labour Force data: Appendix E.2.2; Employment data: Appendix E.8
Fertility data: 1956-1986 Ratios, Cheung, Jackson and Pool 1994 (see Appendix I.9.3);
1991 Rates, Database C (see Appendix I.9.3)

APPENDIX I.11.1

Age at Which Peak Age-Specific Fertility Rate has Occurred for Cohorts Born 1957-1971, and Mean Income of Cohorts in Full-time Employment, when Cohort Aged 20-24 Years, by Sex and Ethnic Classification

Year of Observation/ Year of Birth of Cohort	NON-MAORI/EUROPEAN			MAORI		
	Income ($1991)		Age at Peak ASFR	Income ($1991)		Age at Peak ASFR
	Females	Males		Females	Males	
1981 (Born 1957-61)	23,897	27,676	26	20,858	25,348	20
1986 (Born 1962-66)	21,127	24,030	28	17,847	21,455	22
1991 (Born 1976-71)	20,132	21,679	28	17,729	19,321	21

Notes: Income = Maori Ethnic Group and European;
Fertility = Maori Ethnic Group and Non-Maori

Source: Income data: Database B
Fertility data: Database C (see Appendix I.9.3)

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